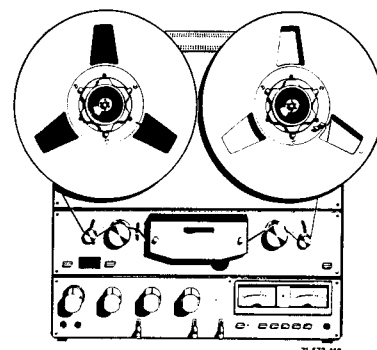


Service
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Service Manual

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Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

Documentation Technique Service Dokumentation Documentazione di Servizio Huolto-Ohje Manual de Servicio Manual de Serviço



Subject to modification

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PHILIPS

CS 74 680

I. TECHNICAL SPECIFICATIONS

Mains voltages	: 220 V (110-127-240 by changing connections)	Playback frequency response with DIN test tape	
Mains frequencies	: 50-60 Hz (no adaptation required)	4.75 cm/s	: 80 Hz ... 6,300 Hz
Power consumption	: 25 W	9.5 cm/s	: 40 Hz ... 12,500 Hz
Number of tracks	: 4	19 cm/s	: 40 Hz ... 12,500 Hz
Max. reel diameter	: 18 cm	Equalisation	
Tape speeds	: 4.75 cm/s ± 1 % : 9.5 cm/s ± 1 % : 19 cm/s ± 1 %	4.75 cm/s	: 3180 + 120 µs
Wow and flutter at		9.5 cm/s	: 3180 + 90 µs
4.75 cm/s	: ≤ ± 0.2 %	19 cm/s	: 3180 + 50 µs
9.5 cm/s	: ≤ ± 0.15 %	Signal-noise ratio weighted curve A, d = 3 %	
19 cm/s	: ≤ ± 0.1 %	4.75 cm/s	: ≥ 56 dB
Winding time for a 26.5 cm reel with LP tape (1080 m)	: < 360 s	9.5 cm/s	: ≥ 60 dB
Input sensitivities		19 cm/s	: ≥ 62 dB
MIC	: 0.3 mV/2 kΩ	Signal-noise ratio DIN, for all speeds unweighted, d = 3 %	: ≥ 48 dB
LINE IN 1	: 50 mV/100 kΩ	Distortion (at 333 Hz and 0 dB output):	: ≤ 3 %
LINE IN 2	: 2 mV/10 kΩ	Crosstalk attenuation between channels	
Output voltages		≤ 500 Hz	: ≥ 25 dB
LINE OUT	: 0-1 V/5-10 kΩ	1 kHz	: ≥ 40 dB
MULTIPLAY	: 1 V/1 kΩ	≥ 6300 Hz	: ≥ 25 dB
PHONES	: 3 V/600 Ω	between tracks	
Overall frequency response according to DIN 45511 with BASF C264Z tape		35 ÷ 200 Hz	: ≥ 35 dB
4.75 cm/s	: 35 Hz ... 12,500 Hz	1 kHz	: ≥ 60 dB
9.5 cm/s	: 35 Hz ... 18,000 Hz	Erase damping	: ≥ 60 dB
19 cm/s	: 35 Hz ... 25,000 Hz	Bias and erase frequency	: 100 kHz ± 10 %
		Dimensions (w x h x d)	: 442 x 430 x 206 mm
		Weight	: approx. 9 kg

II. CONTROLS

Figs. 1 and 2

- 1

Reel spindles
- 2

Tape tension comparators
- 3

Volume control for cueing (monitoring during fast winding)
- 4

Tape counter with zero reset and zero stop
- 5

Mains switch
- 6

Recording level controls, L/R = left/right channel
- 7

Output level control for line output 30
- 8

Volume control for headphones
- 9

Fine control for tape speed, with indicator
- 10

Recording level meters, LEFT = left channel and tracks 1-4, RIGHT = right channel and tracks 3-2
- 11

Peak level indicator for both channels
- 12

Microphone jack for left channel

Designation on recorder	Designation in diagram
+ ◀ CUEING ▶ −	
RESET	
ZERO STOP	SK802
POWER	SK0
L/R RECORDING	R701/751
LINE OUT	R702/752
PHONES	R703/753
PITCH CONTROL	R704 D471
LEFT	ME1
RIGHT	ME101
PEAK	D10
MIC.L	BU5

- 13 Microphone jack for right channel
- 14 Speed selector
- 15 Track selector
- 16 Monitor switch, also cueing switch
- 17 Recording button with indicator
- 18 Start button
- 19 Pause button
- 20 Fast rewind button
- 21 Fast forward wind button
- 22 Stop button
- 23 Headphones jack

Fig. 2

- 24 Mains cord
- 25 Handle
- 26 Type plate
- 27 Remote control connection
- 28 Line input, "Line-in", L/R = Left/Right channel
- 29 Connection for Sound on Sound multiplay recordings
- 30 Line output L/R = Left/Right channel
- 31 Line input, "Line-in" L/R = Left/Right channel

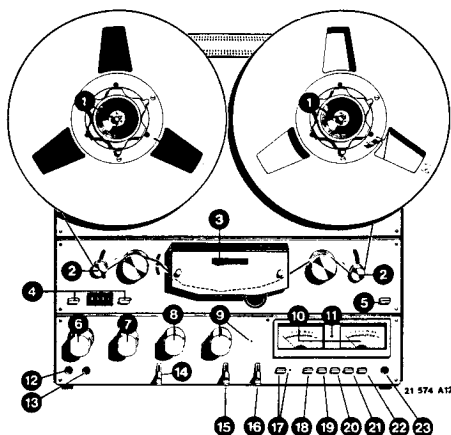


Fig. 1

MIC.R	BU105
SPEED	SK1
TRACK	SK3
MONITORING	SK4
REC	SK5
PLAY ►	SK6
PAUSE	SK7
REW ◀◀	SK8
FF ▶▶	SK9
STOP ■	
PHONES	BU6

REMOTE	BU401
LINE IN 1	BU3, BU103
MULTIPLAY	BU2
LINE OUT	BU4, BU104
LINE IN 2	BU1/BU101

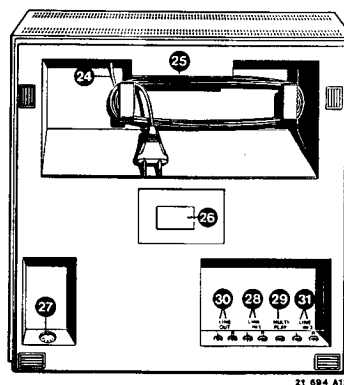


Fig. 2

III. DISMANTLING

Figs. 3 and 4

1. Backcover

- Remove the 5 screws G and the two supports F at lower side.
- Slide backcover backwards.

2. Head cover and cueing control

- Remove 2 ornamental screws E.
- Head cover and cueing control can be taken from recorder.

3. Upper ornamental plate

- Remove 5 ornamental screws A.
- Ornamental plate can be removed after being slid slightly downwards.

4. Lower ornamental plate

- Remove backcover.
- Remove from the back the bushes on the spindles of the tape tension rollers D.
- Remove the tape tension rollers D from the set by pulling them forwards.
- Remove the upper ornamental plate.
- Remove 9 screws B, the knobs of the lever switches and of the controls.
- Ornamental plate can now be taken from recorder.

5. Indicators and overmodulation LED

- Remove lower ornamental plate.
- Remove ornamental frame in front of indicators.
- Indicators can be taken out of recorder in forward direction.
- Overmodulation LED is accessible after removal of indicators.

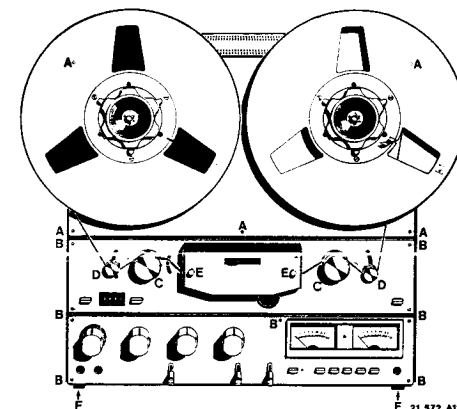


Fig. 3

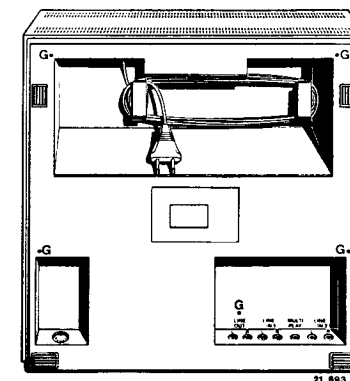


Fig. 4

IV. ADJUSTMENTS AND CHECKS

1. General remarks

- The electrical measurements and adjustments refer to the left channel. The connecting points and controls for the right channel are given in brackets.
- Before each measurement or adjustment with running tape, heads and tape guides should be demagnetized and cleaned.
- Do not use magnetized screwdrivers.
- All voltages given have been measured with an electronic voltmeter.
- The outputs measured should be terminated with a resistor of 100 k Ω .
- Adjusted cores should be sealed.
- Adjusted screws and nuts should be lock-painted.
- Test tapes used:
 - . BASF-C264Z - 3922 566 21640
 - Unmodulated tape.
 - . DIN test tape 9.5
 - For adjustment of head inclination and azimuth and check of the frequency response during playback.
 - . To check the tape speed it is possible to use:

3150 Hz	4.75 cm/s	3922 566 21370
3150 Hz	9.5 cm/s	3922 566 21380
3150 Hz	19 cm/s	3922 566 21390

2. Tape guides (item numbers 224, 229, 241, 273)

- The 4 tape guides have been accurately adjusted by the factory and they should never be replaced simultaneously, for in that case there will be no reference point left.
- Insert a tape and select PLAY mode.
- The height of the replaced tape guide should be such that the tape passes the outer tape guides at the lower side and the inner tape guides at the upper side.

3. Tape tension comparators

To the indication on brackets 521 and 532 applies: each mark is 2°.

Mechanical

The force required to keep the lever in position -8° should be 0.9 N. This force can be adjusted by changing the suspension points of spring 217, 289.

After adjustment, the force required to keep the lever in position +4° should be 0.7 N.

Electrical

The "output" (point 3 panel 3 A and point 1 panel 3B) should be loaded with 100 k Ω $\pm$ 5 %.

The voltage should be measured with a voltmeter $R_i \geq 1$ M Ω .

In position 0° the voltage at the "output" should be 7.5 V $\pm$ 0.2 V. The voltage can be adjusted by shifting the metal core (bracket 523, 538) after screw M2x4 has been loosened.

After adjustment the voltage at the output should be 5.7 V $\pm$ 0.3 V in position +8°.

4. Brake (Fig. 6)

- When the brake solenoid is energized clearance A between brake shoe and reel disc should be ≤ 0.8 mm. The brake shoe should not interfere with the reel disc. The clearance can be adjusted by turning wheel C.
- For winding the brake torque should be between 80 mNm and 88 mNm.
Brake torque = force x arm.
The brake torque is adjustable by changing suspension point B of spring F2.

5. Reel disc (Figs. 8 and 9)

Height adjustment

- Insert a tape.
- Select REW mode for checking or adjusting the left-hand reel disc and FF mode for checking and adjusting the right-hand reel disc.
The tape should wind in the centre of the reel.
The height of the reel disc can be adjusted by turning adjusting screw G (accessible via backcover).
- The axial play should be between 0.1 mm and 0.15 mm. This is adjustable with adjusting screw H which is countersunk in adjusting screw G.
- The clearance between the mounting plate of the reel disc and the cabinet should be equal at the three fixing points.
The clearance is adjustable with the lower fixing screw.

Replacement

- Attention to toothing of reel disc and gear. They are not the same left and right. (Check that reel disc is clean and lubricate with Alvania.)
- Remove gear A from motor shaft by loosening two bolts B.
- Insert reel disc shaft partially in bearing and check shaft distance I of reel disc and motor. This distance I should be 33.8 mm $\pm$ 0.1 mm and is adjustable by loosening screws J and displacing reel disc bearing in slotted holes K.
Measure this distance by means of caliper gauge and recheck after tightening screws J.
- Fix gear A and adjust height C by means of screws B.
- Locate earth spring (item number 234) and guide it through eyelet of solder tag L.
- Guide reel disc shaft through bearing and lock it with clamping ring (3.2 mm).
- Completely tighten adjusting screw G (clockwise).
Press pulley E (for left-hand side together with counter belt) against stop F and fix with screw D.
- Adjust height of reel disc and axial play as described above.

6. Flywheel (Fig. 7)

Perpendicular adjustment of capstan

- Insert a DP tape.
- Select PLAY mode.
Turn screw A until tape runs flat between capstan and pressure roller.
- Clearance between bearing and oil-retaining ring should be between 0.5 mm and 0.8 mm.
This clearance is adjustable by moving the oil-retaining ring.

7. Pulling force on tape

Below applies:

"REW-lever" is, seen from the back, the right-hand tape tension lever.
"FF-lever" is, seen from the back, the left-hand tape tension lever.

- Insert an 18 cm tape (approx. in middle of tape).
- Select PLAY mode.
Adjust with R471 the "REW-lever" to $+4^\circ \pm 1^\circ$.
Then the "FF-lever" should be adjusted to $-8^\circ \pm 1^\circ$ with R477.
- Select PAUSE mode.
Press down the brake bracket rod until the brake shoes are released from the reel discs.
Adjust with R475 the "FF-lever" to $+4^\circ \pm 1^\circ$.
- Select FF mode.
Adjust after approx. 5 s the "FF-lever" to $-8^\circ \pm 1^\circ$ with R473.
- Select REW mode.
Check after approx. 5 s that "REW-lever" is at $-8^\circ \pm 2^\circ$.

8. Speed adjustment

- Connect a wow and flutter meter to BU4/BU104 LINE OUT.
- Insert a test tape having a frequency of 3150 Hz recorded at 4.75 cm/s, 9.5 cm/s or 19 cm/s dependent on the speed to be adjusted on the set and play it back.
Adjust for correct speed by means of one of the trimming potentiometers (see table below).
- After the speed adjustment the wow and flutter is allowed to be as indicated in the table below.

Speed	Trimming potentiometer	Wow and flutter
4.75	R801	$\leq \pm 0.2$ %
9.5	R802	$\leq \pm 0.15$ %
19	R803	$\leq \pm 0.1$ %

9. Suppression of radiation from erase oscillator signal

- Set recorder in position: 19 - ST - TAPE CUEING - REC - PLAY.
- "LINE-OUT" control at "MAX", other controls at "0".
- No tape in recorder.
- Adjust for minimum voltage (≤ 10 mV) on BU3 (BU103) by means of L1 (L101).

10. Playback head (Fig. 5)

- Height and inclination of heads supplied by Service have already been adjusted in factory.
- Tape guides should have been adjusted to correct height (see chapter ADJUSTMENTS AND CHECKS, paragraph 2).

10.1. Head inclination

- The front of the head should be exactly parallel to the tape or perpendicular to the mounting plate.
- Check:
Playback the 10 kHz azimuth adjustment section of the DIN test tape. Brake the left-hand reel slightly by hand and measure the output voltages of both channels.

Braking should not cause the output voltage of both channels to increase by more than 2 dB. (Should this be the case, the tape path must be checked.) If, as a result of braking, only the output voltage of the left-hand channel increases by more than 2 dB, the head inclines backwards. If braking only causes the output voltage of the right-hand channel to increase by more than 2 dB, the head inclines forwards.
Head inclination is adjustable with screw A.

10.2. Azimuth

- Playback the azimuth adjustment section of the DIN test tape.
- The TRACK selector should be in position ST. The signal should be as large as possible for both channels simultaneously. This is adjustable with screw C.

11. Adjustment of playback amplifier

- Set recorder in position: 9.5 - ST - TAPE CUEING - PLAY.
- LINE-OUT control at maximum.
- Insert a DIN reference tape for 9.5 cm and playback the reference level section.
- Adjust for an output voltage of 0.6 V $\pm$ 0.5 dB on BU4 (BU104) by means of R41 (R141).

12. Playback frequency response

- Set recorder in position: 19 - ST - TAPE CUEING - PLAY.
- LINE-OUT control at maximum.
- Insert a 19 cm DIN reference tape and playback the frequency response section.
- The frequencies 40 Hz and 12.5 kHz should be within 7 dB with respect to the reference frequency.
The frequencies between 250 Hz and 6300 Hz should be within 5 dB with respect to the reference frequency.

13. Recording head (Fig. 5)

- Height and inclination of the heads supplied by Service have already been adjusted in factory.
- Tape guides should have been adjusted to correct height (see chapter ADJUSTMENTS AND CHECKS, paragraph 2).
- Connect the recording head as playback head by inserting the plug of the recording head in the socket of the playback head on PC-board 1.
Plug 3 in connector 4.
Plug 4 in connector 3.
- If necessary, head inclination and azimuth should be adjusted as described for playback head.
- Reinsert the plugs in the original connectors.
- Set recorder in position: 19 - ST - SOURCE - PLAY - REC.
- Insert a reference tape (BASF C264Z).
- Apply a signal of 1 kHz to BU1 (BU101).
- Set the indicators to 0 dB with recording controls.
- Set recorder in position TAPE CUEING.
- The output signal should be maximum and the phase difference should be $< 10^\circ$.
This is adjustable with screw C.

- Increase the frequency to 10 kHz.
- The phase difference should be smaller than 45°
If necessary, readjust with screw C.

14. Adjustment of channel equality, indicator reading and recording amplifier

- Set recorder in position: 9.5 - ST - SOURCE.
- Apply a signal of 330 Hz, 500 mV to BU1 (BU101).
- LINE-OUT control at maximum.
- Adjust for 1 V output voltage on BU104 with recording level control for right-hand channel.
- Set recording level control for left-hand channel to same position as for right-hand channel and adjust for 1 V output voltage on BU4 with R214.
- Adjust for a 0 dB indicator reading with R78 (R178).
- Insert a reference tape (e.g. BASF C264Z).
- Set recorder in position: SOURCE - REC - PLAY.
- Apply a 330 Hz signal until 1 V appears on LINE-output BU4 (BU104) (indicator reading 0 dB).
- Set recorder in position TAPE CUEING.
- Adjust for 1 V voltage on BU4 (BU104) with R63 (R163) (indicator reading 0 dB).

15. Adjustment of bias, check of overall frequency response and distortion

- In case of a correct adjustment of the bias, a compromise must be found between frequency response and distortion.
The target value is 8 mV (across R61, R161), and is adjustable with R90, R190.
- Set recorder in position: 19 - ST - TAPE CUEING - REC - PLAY.
- Insert a frequency tape (BASF C264Z).
- The frequency response should be measured at -26 dB.
The frequencies 35 Hz and 25 kHz should be within 7 dB.
The frequencies between 250 Hz and 6300 Hz should be within 5 dB.
The reference point is at 1 kHz.
- The distortion measured at 0 dB, should be smaller than 3 %.
If the high frequencies are too much attenuated, the bias current will be too high. If the high frequencies are too strong and/or if distortion is audible, the bias current will be too low.
This is adjustable with R90/R190.
- If R90/R190 has to be adjusted, repeat the frequency response measurement.

V. LUBRICATING INSTRUCTIONS

- Mobil oil SHC 634 – 4822 390 10074.
Capstan bearings item numbers 238, 324.
- Shell Alvania 2 – 4822 389 10001.
Sliding surfaces of item numbers 266, 296, 309, 329, 526.
- Silicone grease medium 300 – 4822 390 20031
Left-hand shaft of item number 309.
- Heavy medium DTE – 4822 390 10065
Right-hand shaft of item number 309.

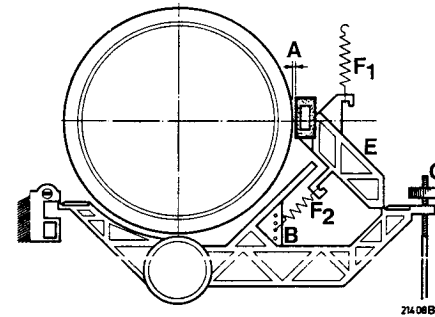


Fig. 6

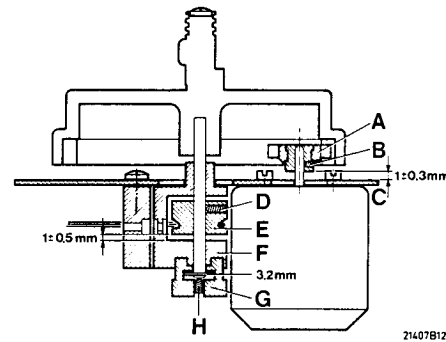


Fig. 8

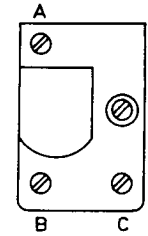


Fig. 5

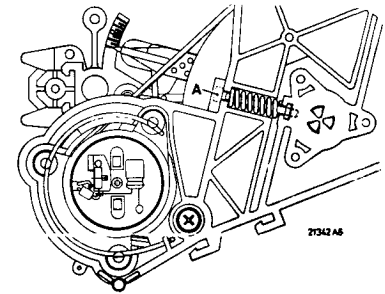


Fig. 7

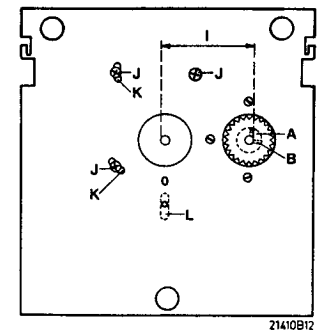


Fig. 9

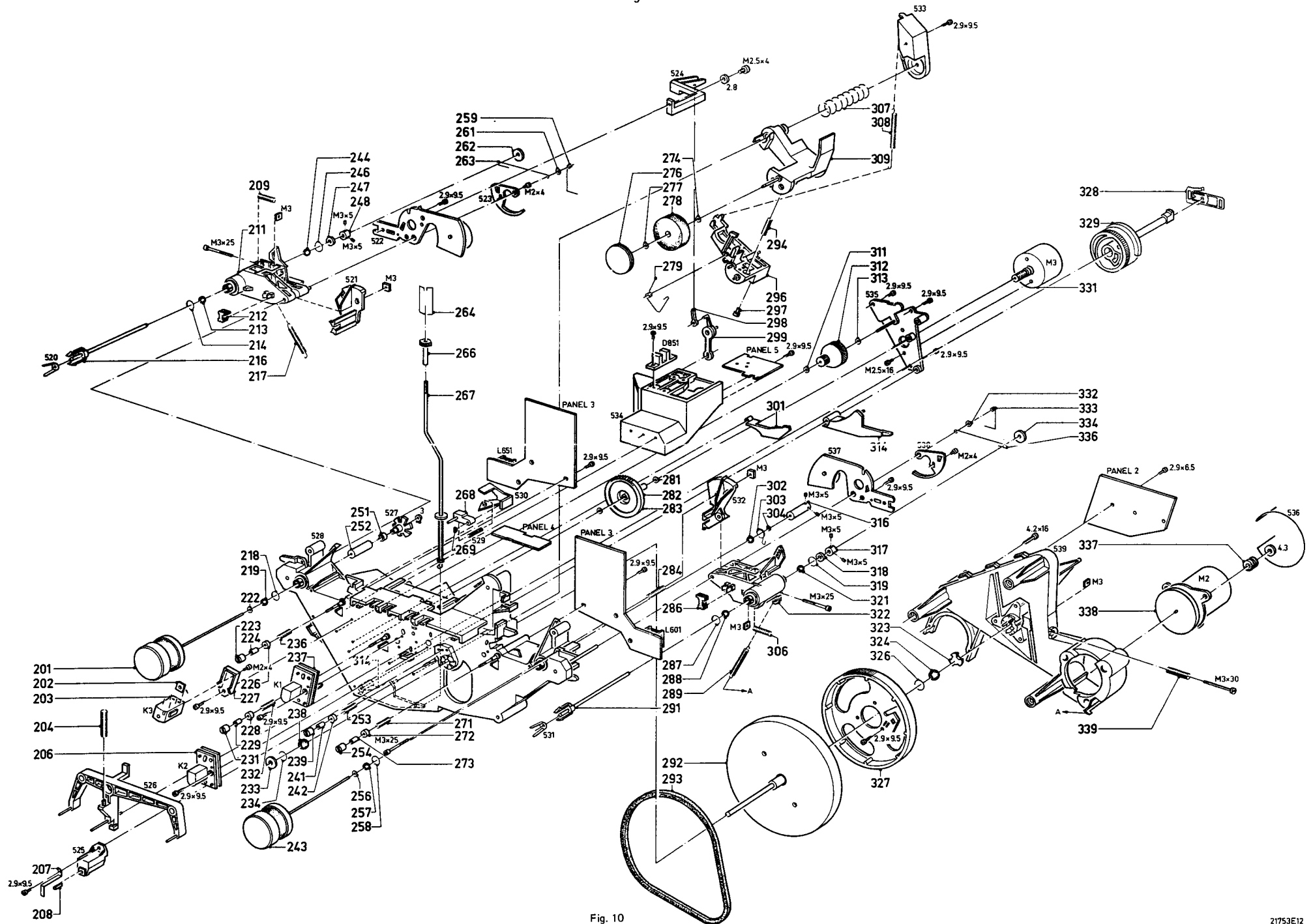


Fig. 10

MECHANICAL PARTS TAPE TRANSPORT

201	4822 528 80794	253	4822 492 50314	303	4822 492 31783
202	4822 466 90884	254	4822 505 10619	304	4822 310 40003
203	4822 249 40064	256	4822 310 40003	306	4822 492 51316
204	4822 492 51302	257	4822 520 10448	307	4822 492 51301
206	4822 249 20046	258	4822 492 31784	308	4822 492 31579
207	4822 492 31809	259	4822 492 31786	309	4822 403 40102
208	4822 535 70598	261	4822 532 50296	311	4822 532 50692
209	4822 492 51316	262	4822 532 51188	312	4822 522 31301
211	4822 403 20133	263	4822 492 31785	313	4822 532 50692
212	4822 462 40419	264	4822 492 31787	314	4822 403 10164
213	4822 520 10448	266	4822 505 10617	316	4822 532 20724
214	4822 492 31784	267	4822 535 91162	317	4822 520 10437
216	4822 535 91188	268	4822 403 40123	318	4822 310 40003
217	4822 492 31626	269	4822 532 50268	319	4822 492 31784
218	4822 492 31784	271	4822 492 50314	321	4822 443 30407
219	4822 520 10448	272	4822 532 10801	322	4822 403 20133
222	4822 310 40003	273	4822 532 20103	323	4822 532 51119
223	4822 505 10619	274	4822 310 40003	324	4822 520 10432
224	4822 532 20103	276	4822 532 51122	326	4822 530 70288
226	4822 532 10801	277	4822 310 40003	327	4822 522 31308
227	4822 443 30395	278	4822 528 90315	328	4822 492 90016
228	4822 532 10801	279	4822 492 90018	329	4822 532 51123
229	4822 532 20103	281	4822 532 50692	331	4822 361 20177
231	4822 505 10619	282	4822 522 31299	332	4822 532 50296
232	4822 492 50314	283	4822 532 50692	333	4822 492 31786
233	4822 532 50904	284	4822 492 51315	334	4822 532 51188
234	4822 530 70288	286	4822 462 40419	336	4822 492 31785
236	4822 492 50314	287	4822 492 31784	337	4822 325 60038
237	4822 249 20045	288	4822 520 10448	338	4822 361 20185
238	4822 520 10432	289	4822 492 31626	339	4822 492 51299
239	4822 505 10619	291	4822 535 91188		
241	4822 532 20103	292	4822 528 90317		
242	4822 532 10801	293	4822 358 30276		
243	4822 528 80794	294	4822 492 51298		
244	4822 520 10448	296	4822 403 40101		
246	4822 492 31784	297	4822 462 40379		
247	4822 310 40003	298	4822 403 51268		
248	4822 520 10437	299	4822 403 20132		
251	4822 532 10284	301	4822 403 30309		
252	4822 532 20724	302	4822 520 10448		

MECHANICAL PARTS CABINET

51	4822 532 51189	87	4822 413 40913	122	4822 492 31811
52	4822 532 20716	88	4822 460 20215 for /00/15	123	4822 502 11461
53	4822 492 51303	88	4822 460 20218 for /28	124	4822 505 10618
54	4822 532 20619	89	4822 403 51296	126	4822 532 51121
56	4822 502 11218	91	4822 403 51347	127	4822 492 51329
57	4822 528 20243	92	4822 502 11446	128	4822 520 10438
58	4822 325 80066	93	4822 528 80771	129	4822 505 10618
59	4822 492 31577	94	4822 361 20186	131	4822 502 11461
61	4822 532 60724	96	4822 522 31302	132	4822 532 51121
62	4822 403 40122	97	4822 358 30278	133	4822 492 51329
63	4822 403 10169	98	4822 403 10169	134	4822 290 40158
64	4822 492 31578	99	4822 410 22377	136	4822 321 10074 for /00/28
65	4822 492 51123	101	4822 349 50118	136	4822 321 10235 for /15
66	4822 532 51191	102	4822 410 30221	137	4822 460 20216
67	4822 532 20716	103	4822 520 10438	138	4822 146 20591
68	4822 492 51303	104	4822 361 20186	139	4822 462 40379
69	4822 532 20619	106	4822 522 31305	141	4822 492 31811
71	4822 502 11218	107	4822 325 60038	142	4822 276 10777
72	4822 443 30406	108	4822 255 40128	143	4822 410 30218
73	4822 502 30192	109	4822 255 40133	144	4822 462 40379
74	4822 502 30192	110	4822 492 62318	146	4822 347 20091
76	4822 454 20415	111	4822 381 10501	147	4822 381 10498
77	4822 492 61667	112	4822 464 50091	148	4822 410 30219
78	4822 492 61667	113	4822 532 60723	149	4822 462 40379
79	4822 528 80795	114	4822 464 50092	151	4822 460 20197
81	4822 413 51067	116	4822 381 10513	152	4822 443 30403
82	4822 492 61667	117	4822 381 10498		
83	4822 413 40879	118	4822 411 50496		
84	4822 413 40878	119	4822 492 61667		
86	4822 413 40878	121	4822 443 30407		

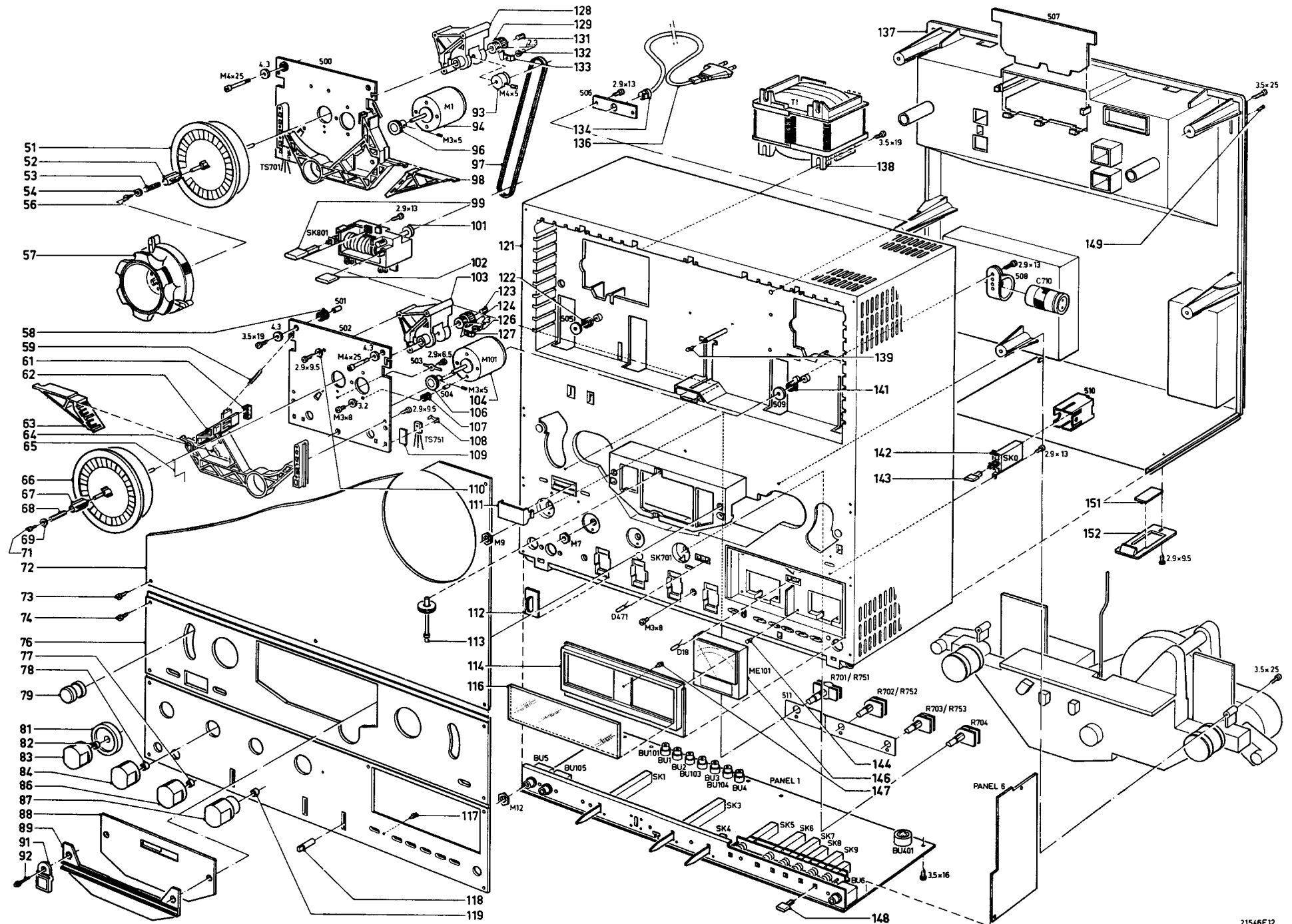


Fig. 11

MISC	SK0	F1	T1	D4	F2	IC2	LA1	LA101	D908	TS910	TS905	TS13	D476
C				55 58	710	60				46			433.15 6.3076910 448
R							219	319		65.64.919.958.81.959.444			43.16.225.958

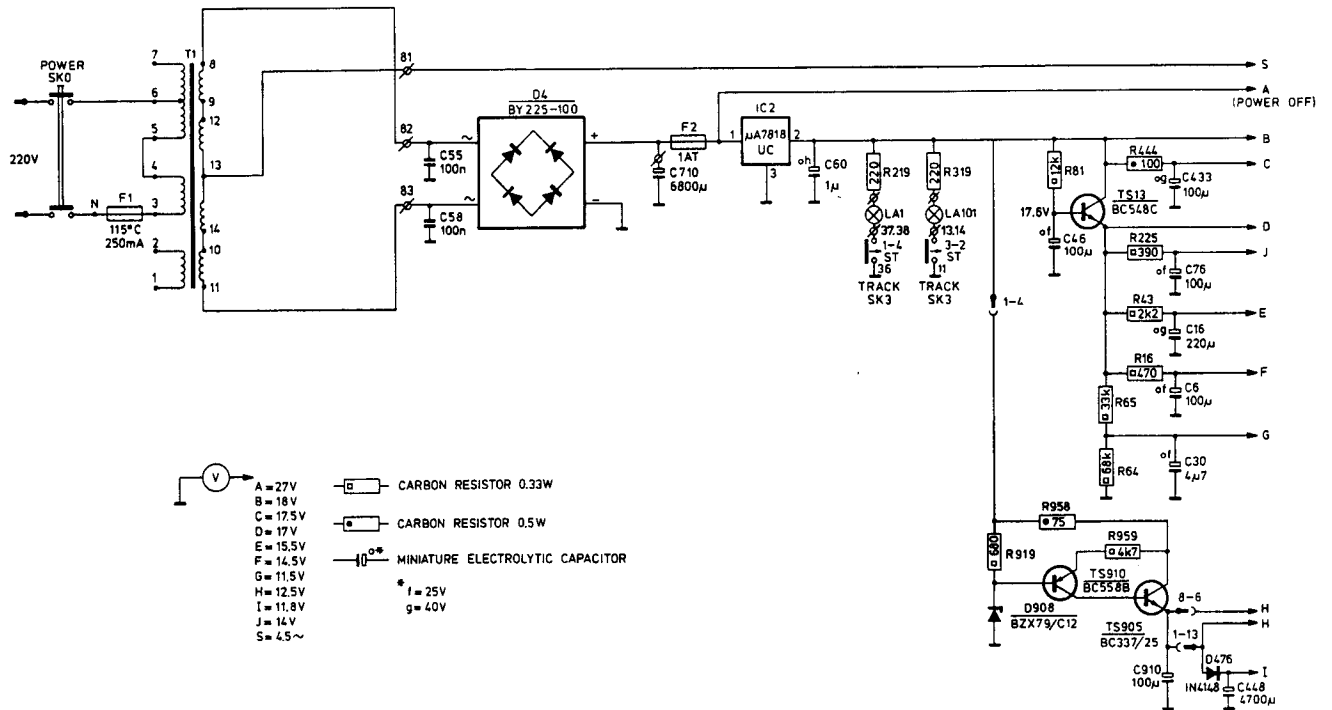


Fig. 12

MISC	TS410 D471	D472 TS422 TS432 TS430	D476 D480	TS423	D460	TS424 D461 D462	D463	TS425	TS426	D501.502	M2 TS427
C	426	425 427	428.429.430	431		432	435	552		443	
R	484.485.818	486.487.833.834.837.443.488.817.835.491.489.490.815.704.836.816.492.820.821.493.494				495.496.801.804.802.805.803.806.556.557.499					553 551.552

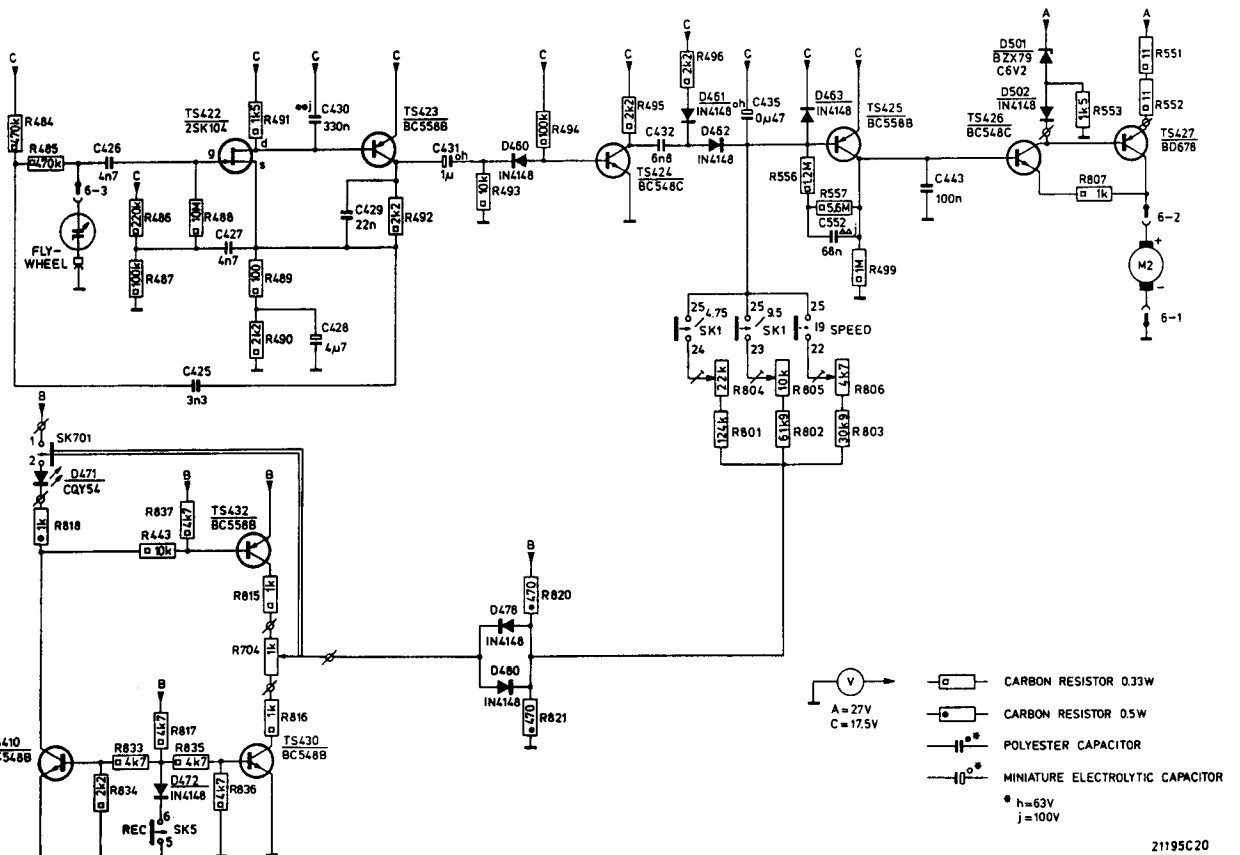


Fig. 13

MISC	D405, D406, D468	D411, D412, D424, D425	D501	D901, D902	D923, D413, D922, D917		D916, D921, D437, D438	D464-D467	
	TS401 TS405	TS406	L901, IC901	TS404	TS403, TS901-904		TS911, TS908, IC901, D439, D440	TS411, TS412	
C	501			927, 902		901, 921	922, 437, 438, 903, 424, 423		
R	832, 401, 408-410	415, 416	419-423, 439	948	405, 406	404, 407, 943, 944	961	808, 962, 963	456, 457, 458-460, 461
	424	501-511		902, 903	901, 960	964, 965, 909, 908	910	942, 945, 946, 906	905, 907, 904, 947

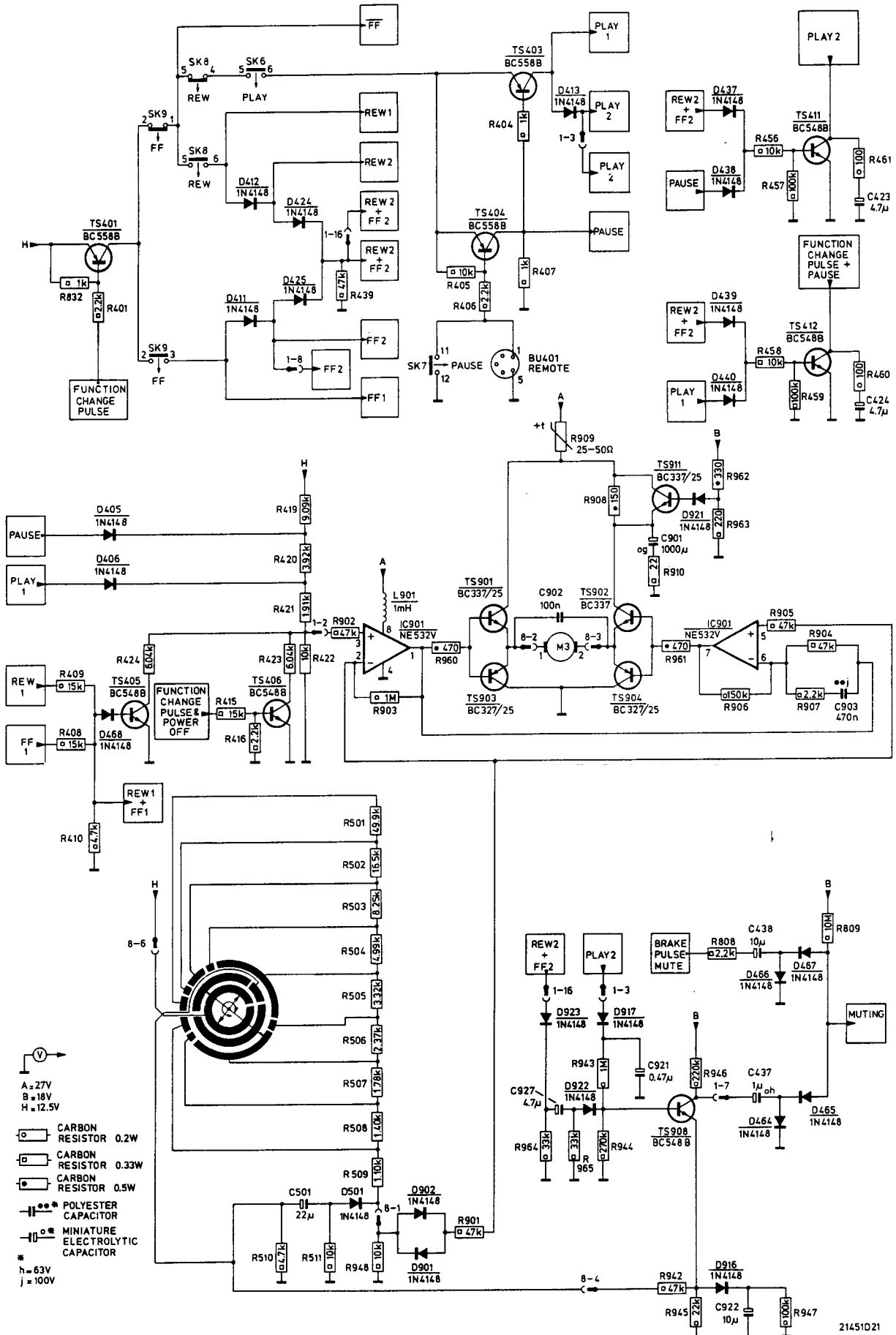
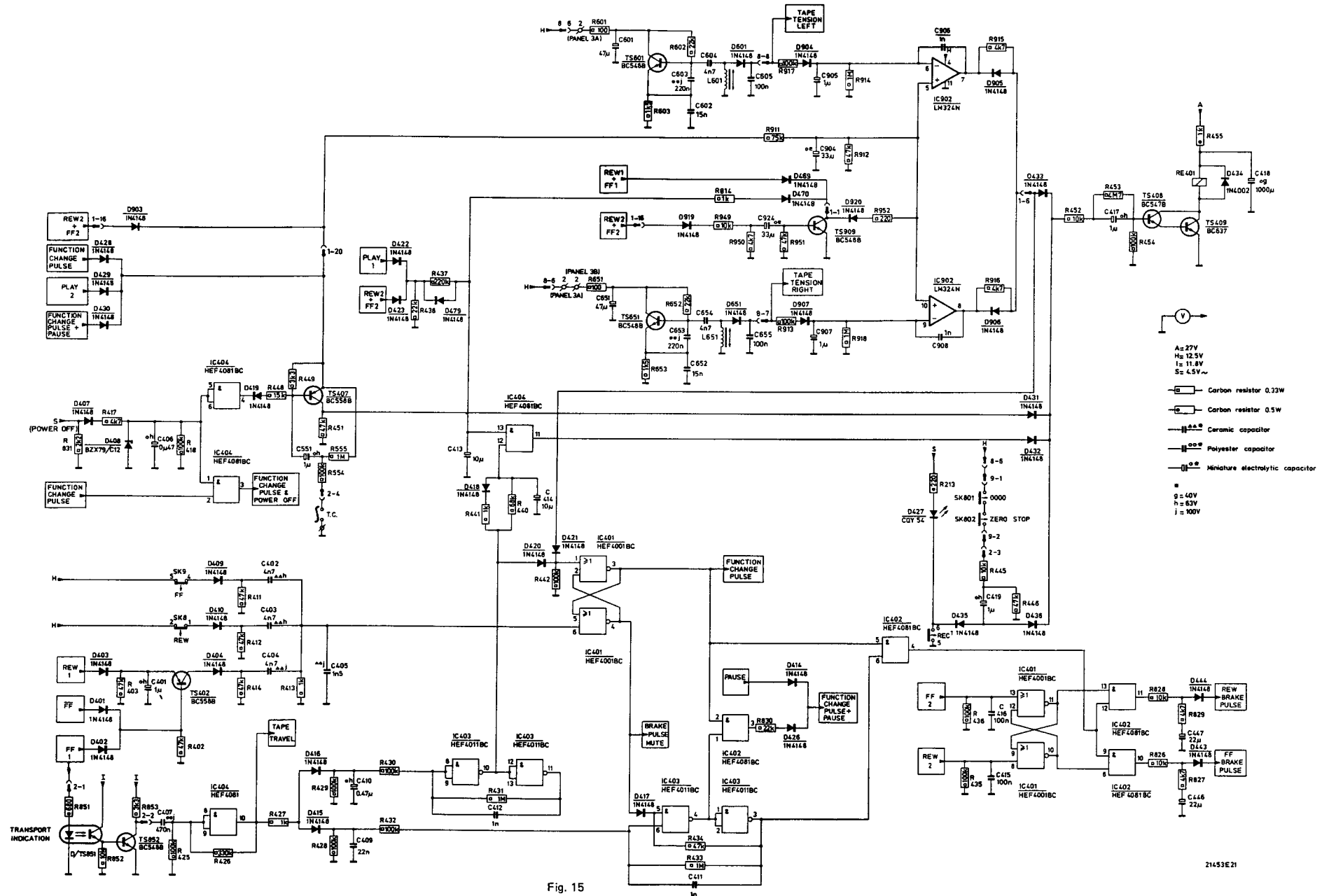
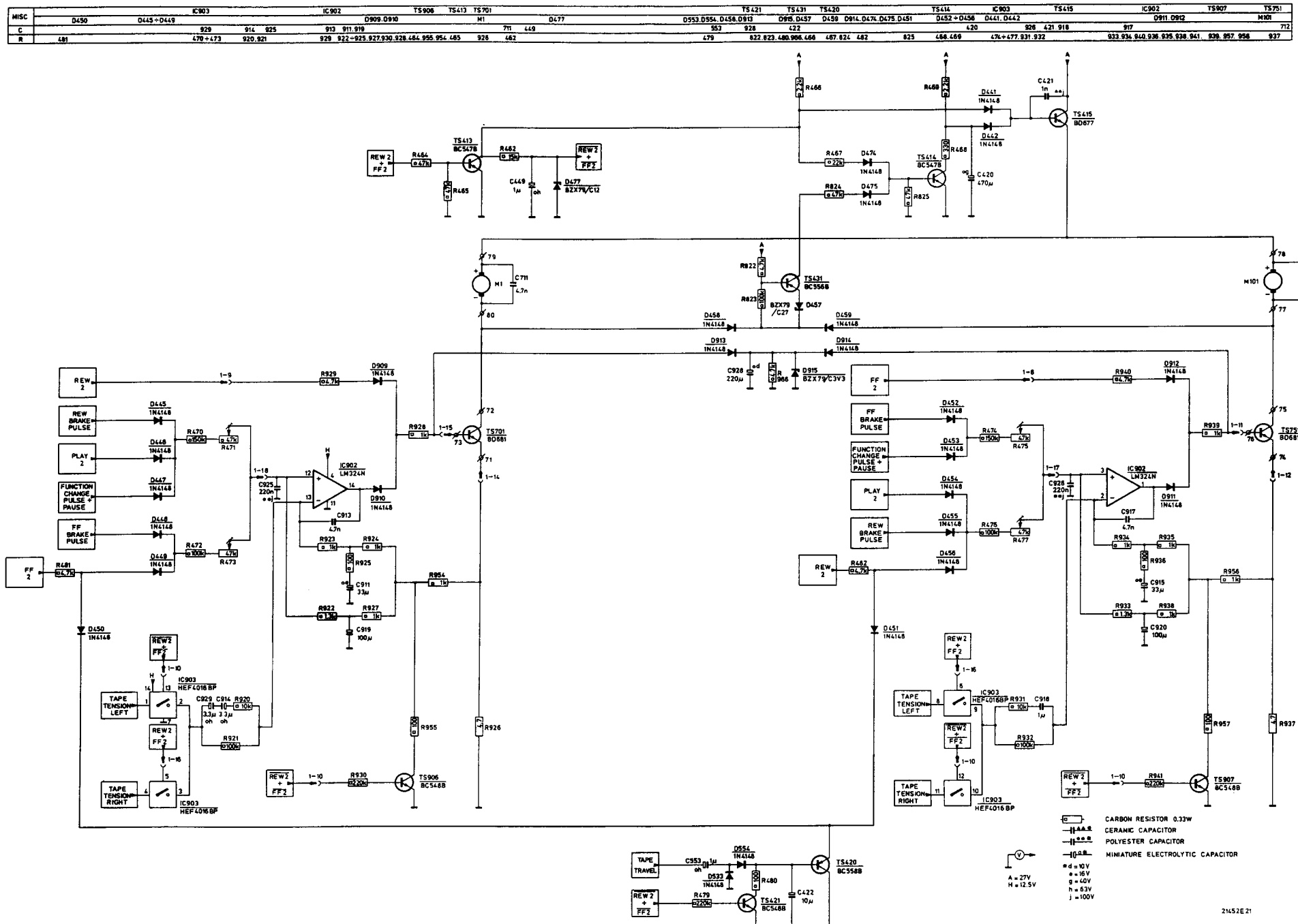


Fig. 14

MISC	D17881	D903 D428-D430 TS402	D409 D410 D419	D415 D418	D422 D423	D479	D416	D420 D421	D418	D417 IC403 L601 L651 IC402	D469 D414 D904 TS909	IC402	IC902	D905	D431 + D433	IC402	TS408	TS409 D443 D444
C	D407 D401 + D404 D408	TS852	IC404				IC403 IC404	IC401		TS601 D319	D601 D651	D470 D428 D907	D920	IC402	D436 IC401		RE401	D434
R	851 852 403 853	425 402	411 + 414	427	428 429	430 432	437	441 440	442	601 603 602 433	814 950 817 911	912 914	952	908	435 445 915	446	452	453 454 826 827 485
	831 417	418	426	448 449	554 451	555	438	431		651 653	652 434 949	830 913 951	916	213	436 447 916		828 829	

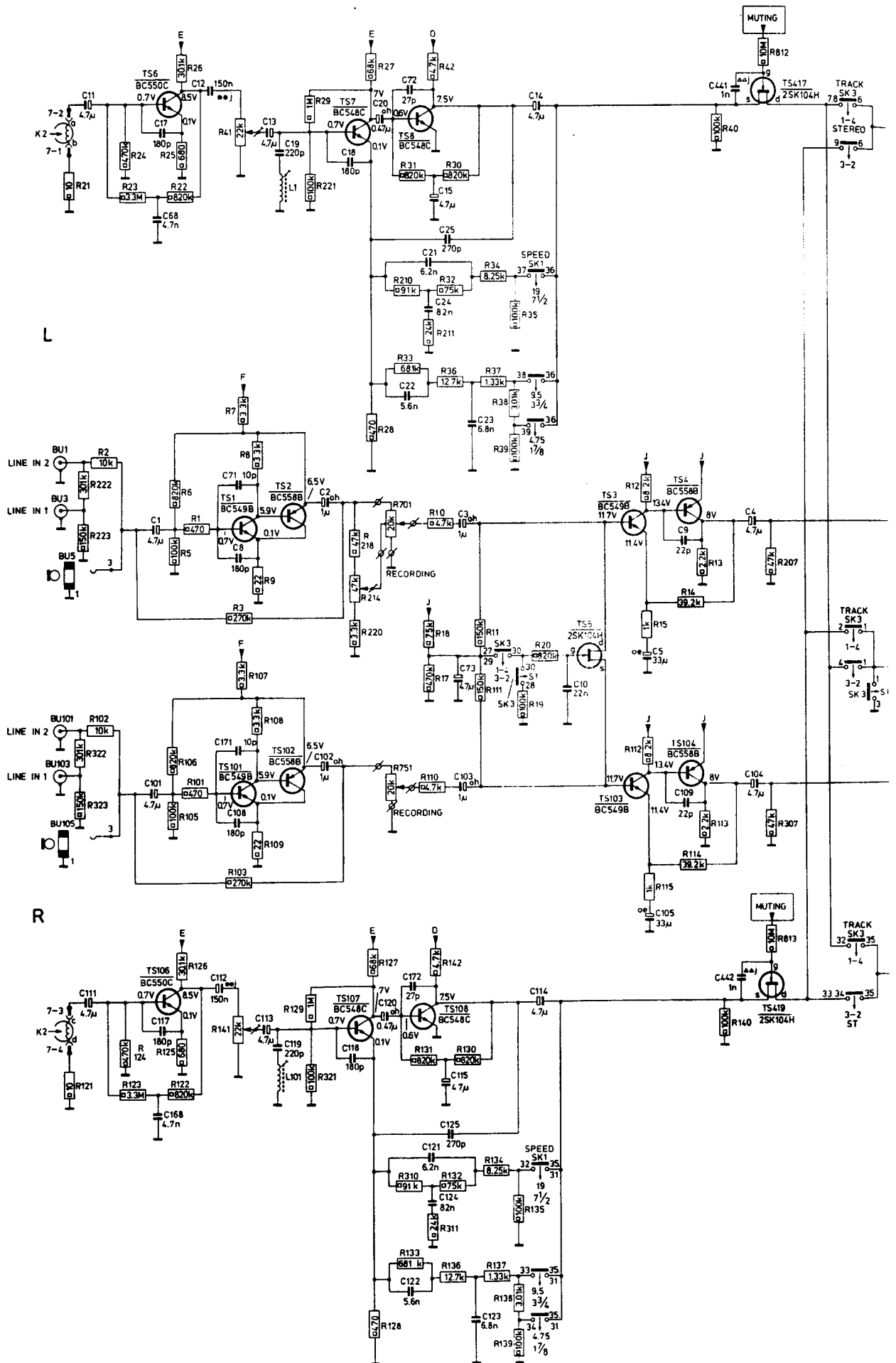




21652E21

Fig. 16

MISC	K2	BU1	BU3	BU5	TS6	TS1L1	TS2	TS7	TS8	TS5	TS3	TS4	TS417								
MISC	BU101	105	103	TS106	TS101L101	TS102	TS107	TS108	TS103	TS104	TS419										
C	11	68.171			8.12.71	13.19	2	18.73	20-25	72	3	15	14	10	5	9	4	441			
C	111	168.117	101	171	108.112	113.119	102	118	120-125	172	103	115	114	105	109	104	442				
R	21.2	222	223	22-26	1.3	5-9	41	220	221	214.216	701	210	27-33	211	10.11	42.34-39	17-20	12.15	14.13	40	207.812
R	121.102	322	323	122-126	101	103.105-109	141	321	310.751	127-133	311	110.111	134-139	142	112.115	114.113	140	307.813			



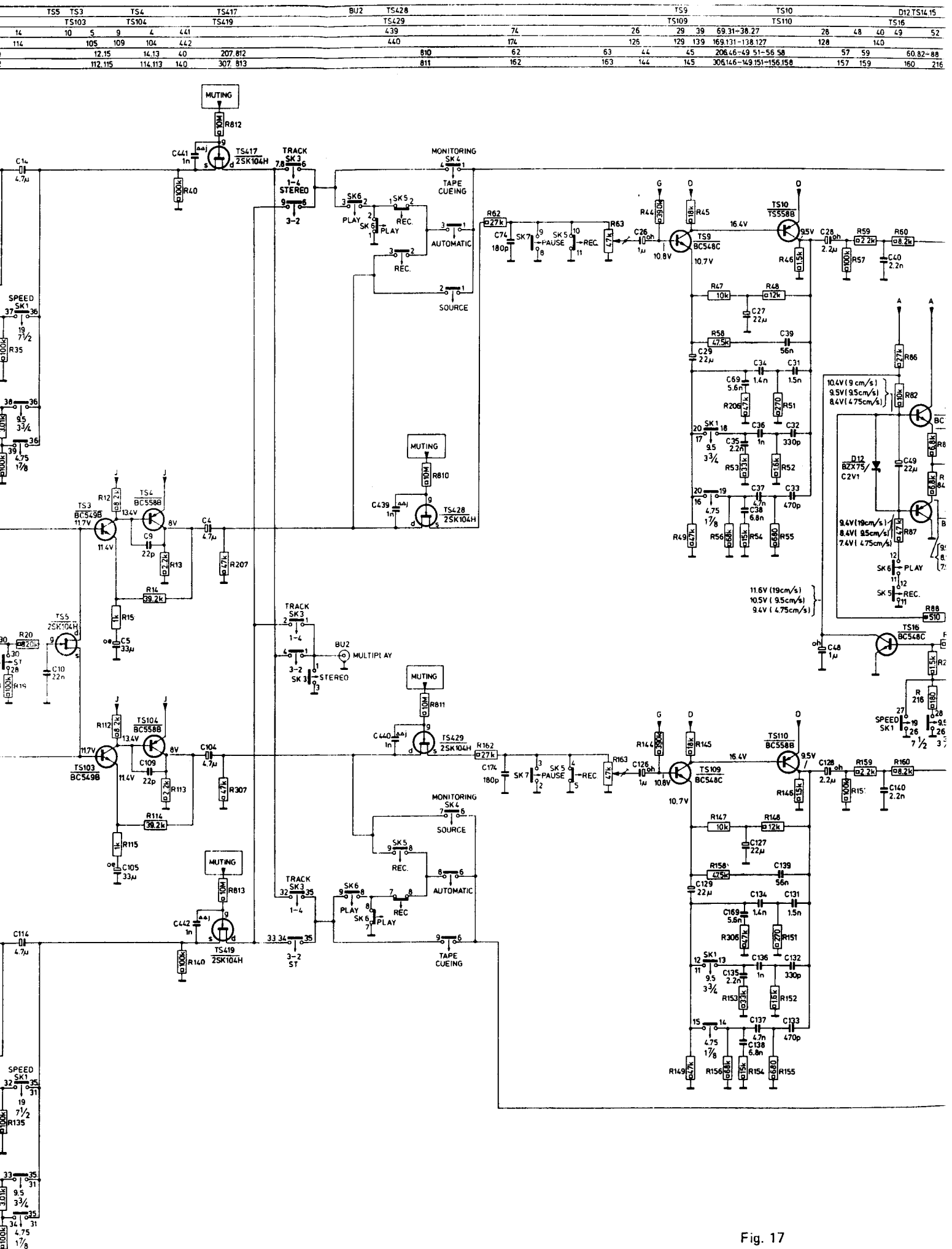


Fig. 17

TS9				TS10				D12 TS14.15				K3				K1				BU4 TS11				TS1				
TS109				TS110				TS16												BU104 TS111				TS1				
26	29	39	69.31-38.27		28	48	40	49	52	53	50		51		67		44	45	70	41								
126	129	139	169.111-138.127		128			140							167		144	145	170	141								
63	44	45	206.46-49.51-56.58		57	59			60.82-88				89		90	61					702	703	202	66.72-76.208	209	57	69.58	75
163	144	145	306.146-149.151-156.158		157	159		160	216	217	215				190	161					752	753	302	166.172-174.308	309	167	169	175

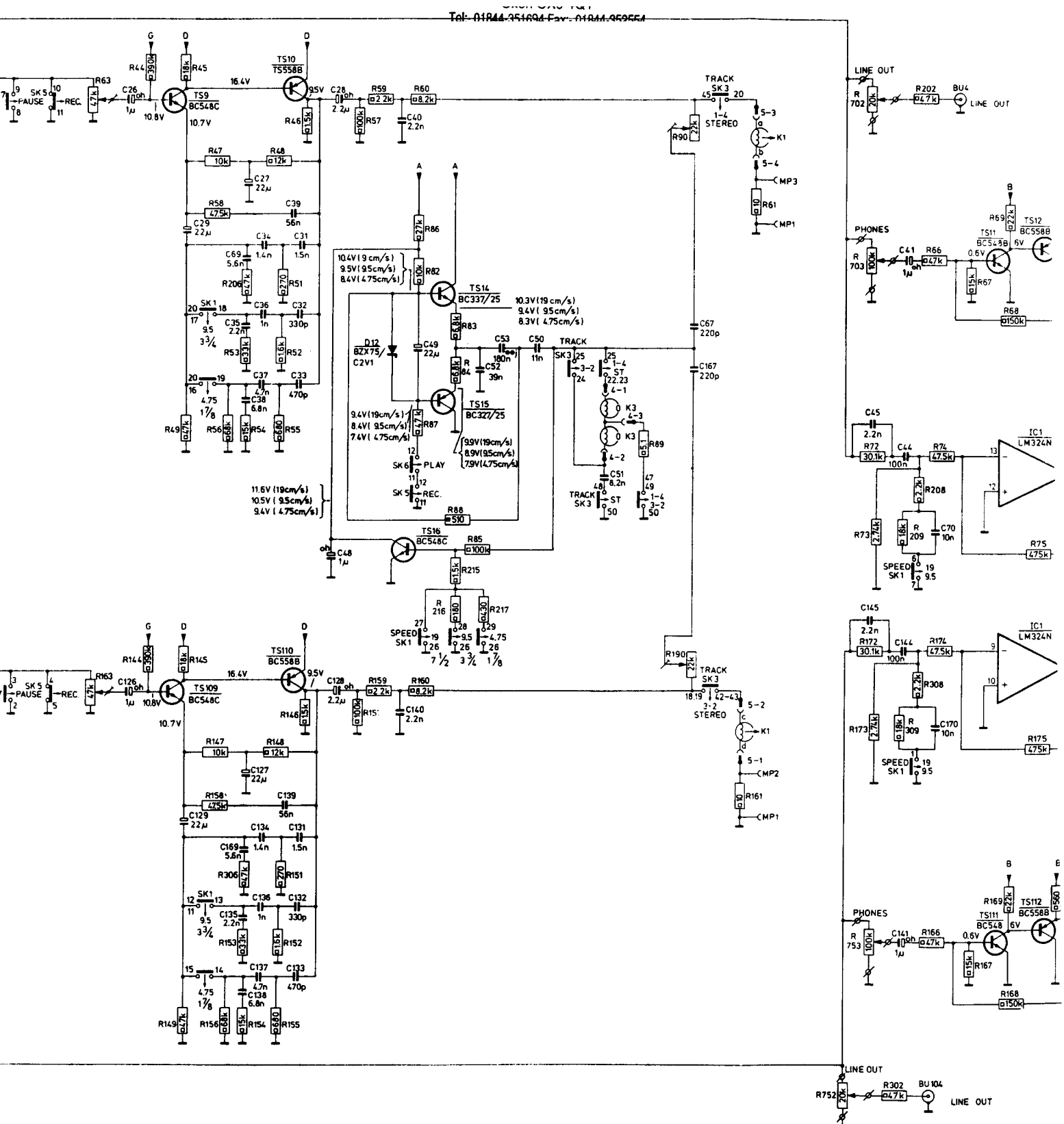
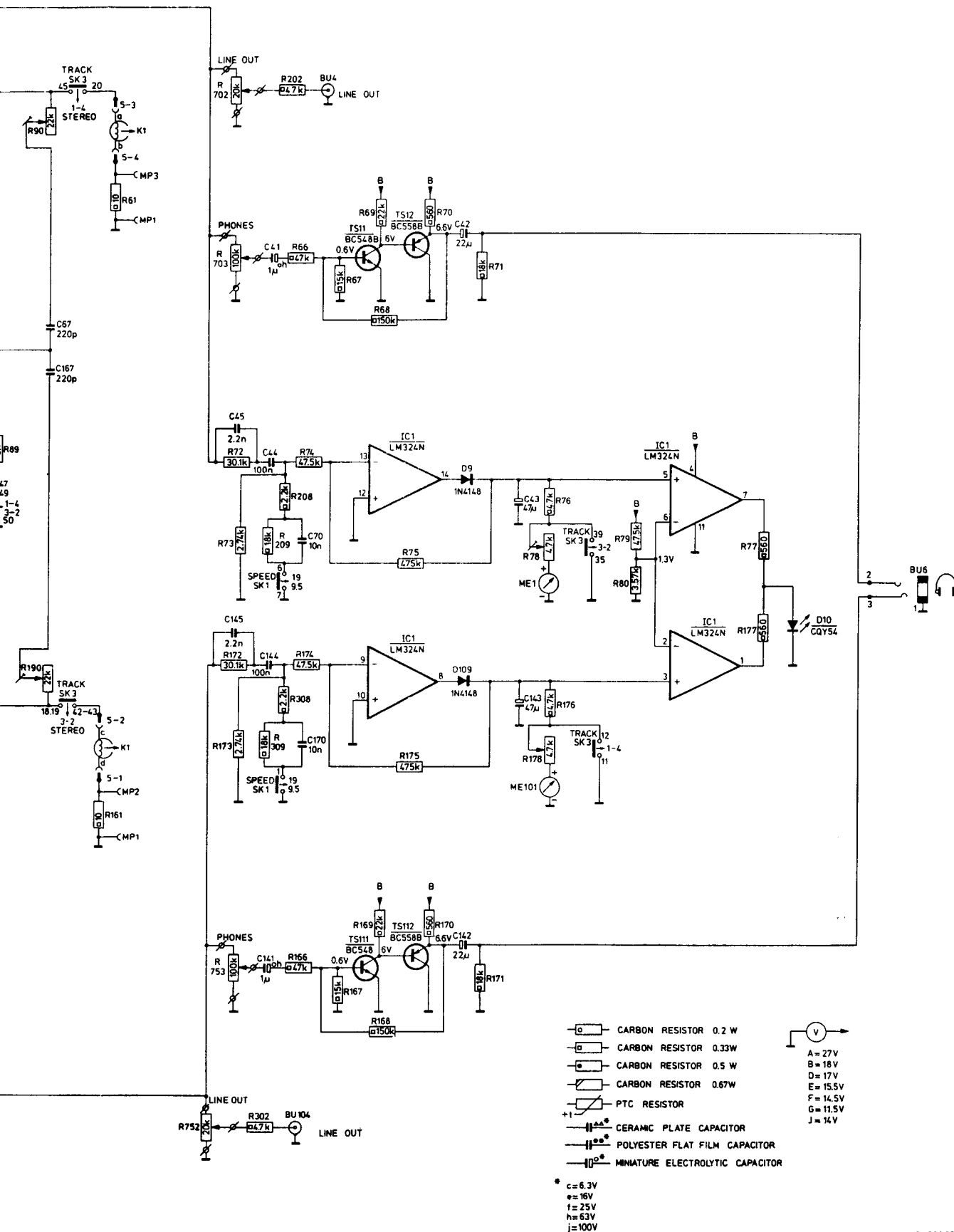


Fig. 17

K1				BU4 TSM		TS12		D9		ME1		IC1		D10		BU6					
				BU104 TS111		TS112		D109		ME101											
67			44	45	70	41			42		43										
167			144	145	170	141			142		143										
	90	61		702	703	202	66	72-74	208	209	67	69	68	75	70	71	75	78	79	80	77
	190	161		752	753	302	166	172-174	308	309	167	169	168	175	170	171	176	178			177





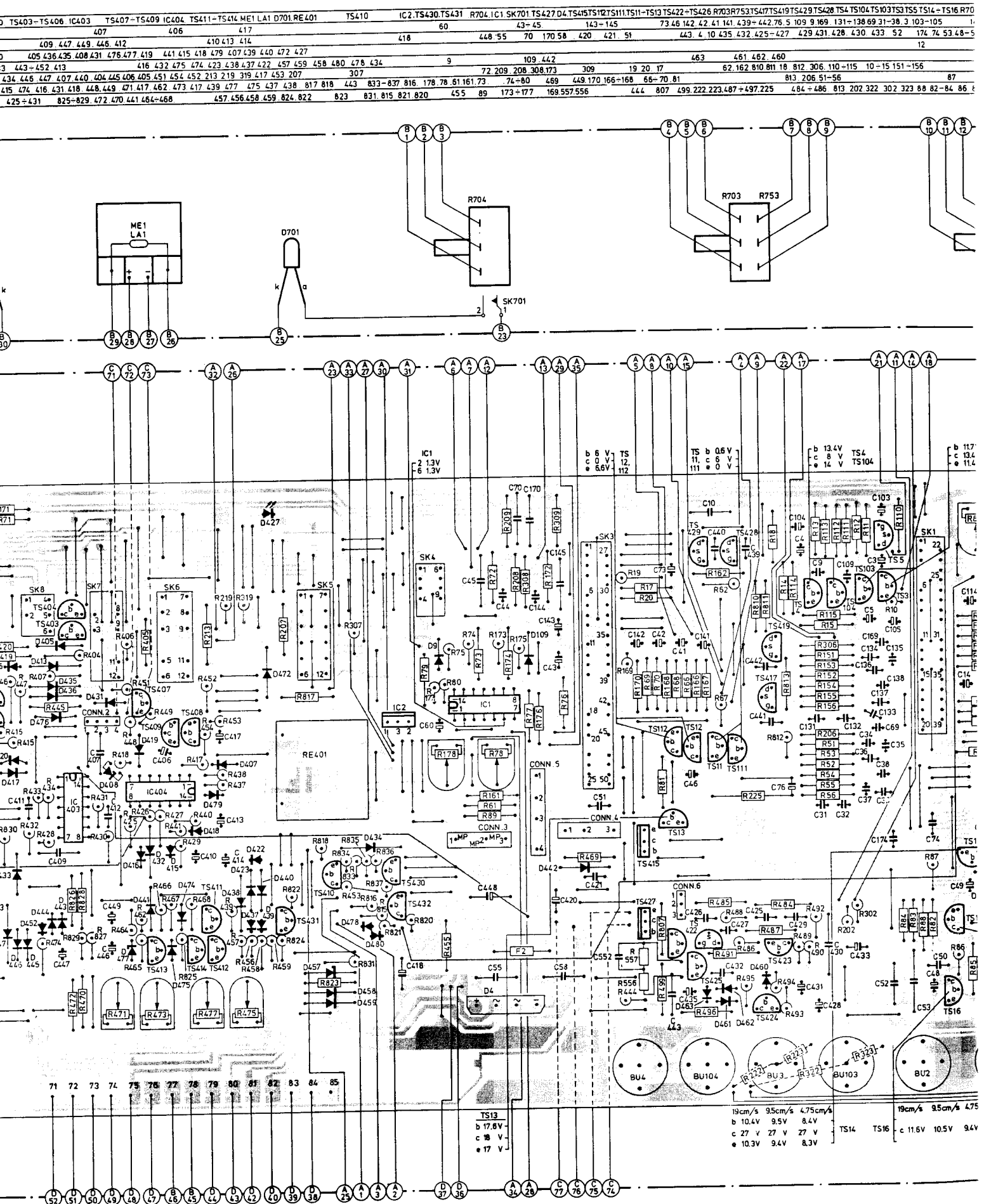


Fig. 18



Fig. 18

MISC	L 901 IC901 IC903 IC902 M101 PLUG 1										CONN.8	SK0	M1 T1	F1
C	903	901.928	922 921	904-908	927	902						710		
	929	919 911 926 925	914 913 712	910 917	918	920 915	924						711	
D	903 923 921 906-910 916 902 901 912-915 911 904 905 922 919 917 920													
R	963 901- 909 943-945 964 965 932-934 917 946 915 952 912 914 910 966 962													
	955 913 916 911 920-930 918 948 954 947 931 935-942 956-961 919 949-951													
TS	906 911 751 910 905 908 901-904 909 907										701			

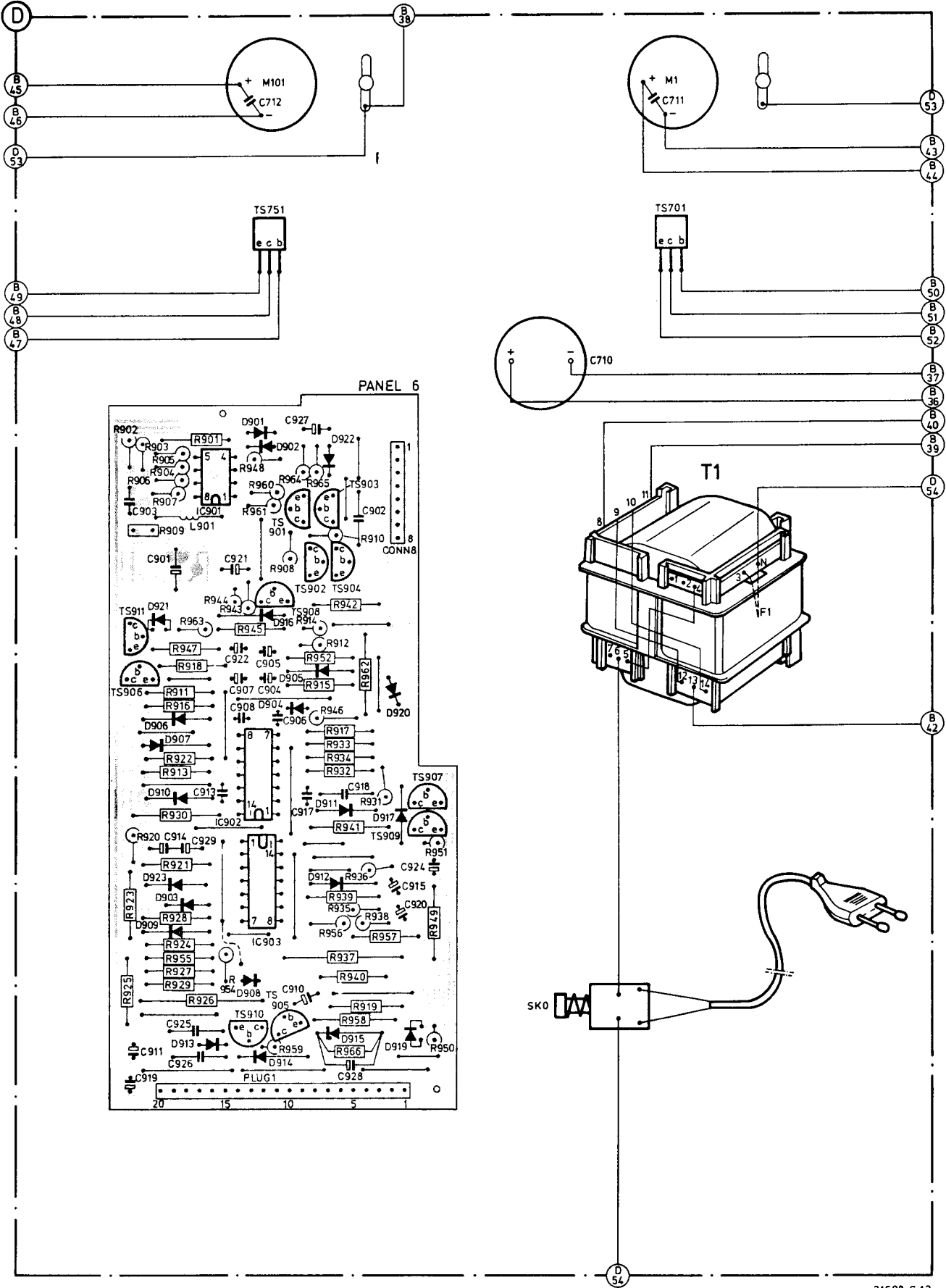
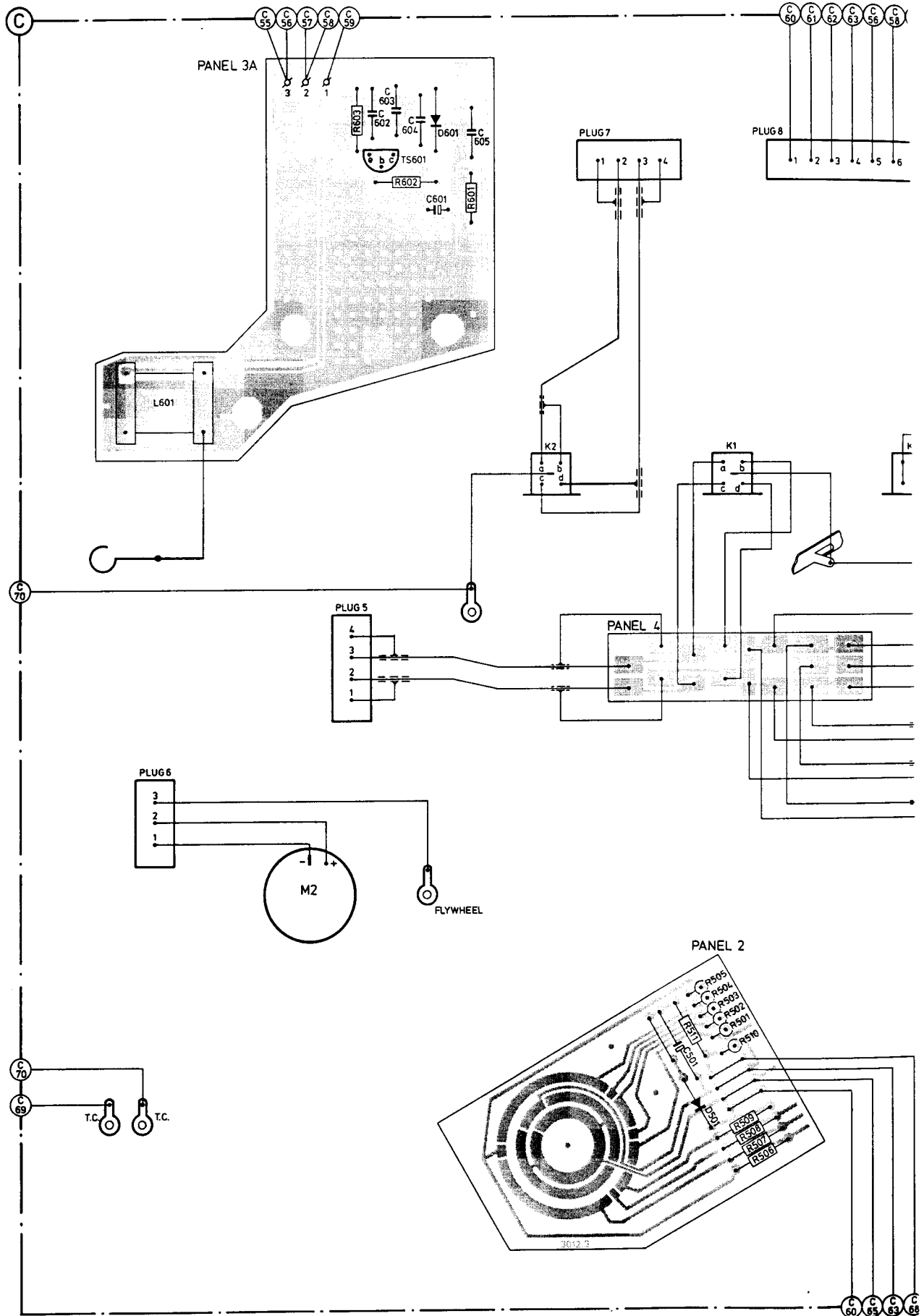


Fig. 19

MISC.	PLUG6	L601	M2	PLUG5	TS601	D601	K2	PLUG7	D501	K1	PLUG8
C					601-605				501		
R					603	602	601		501-510 511		



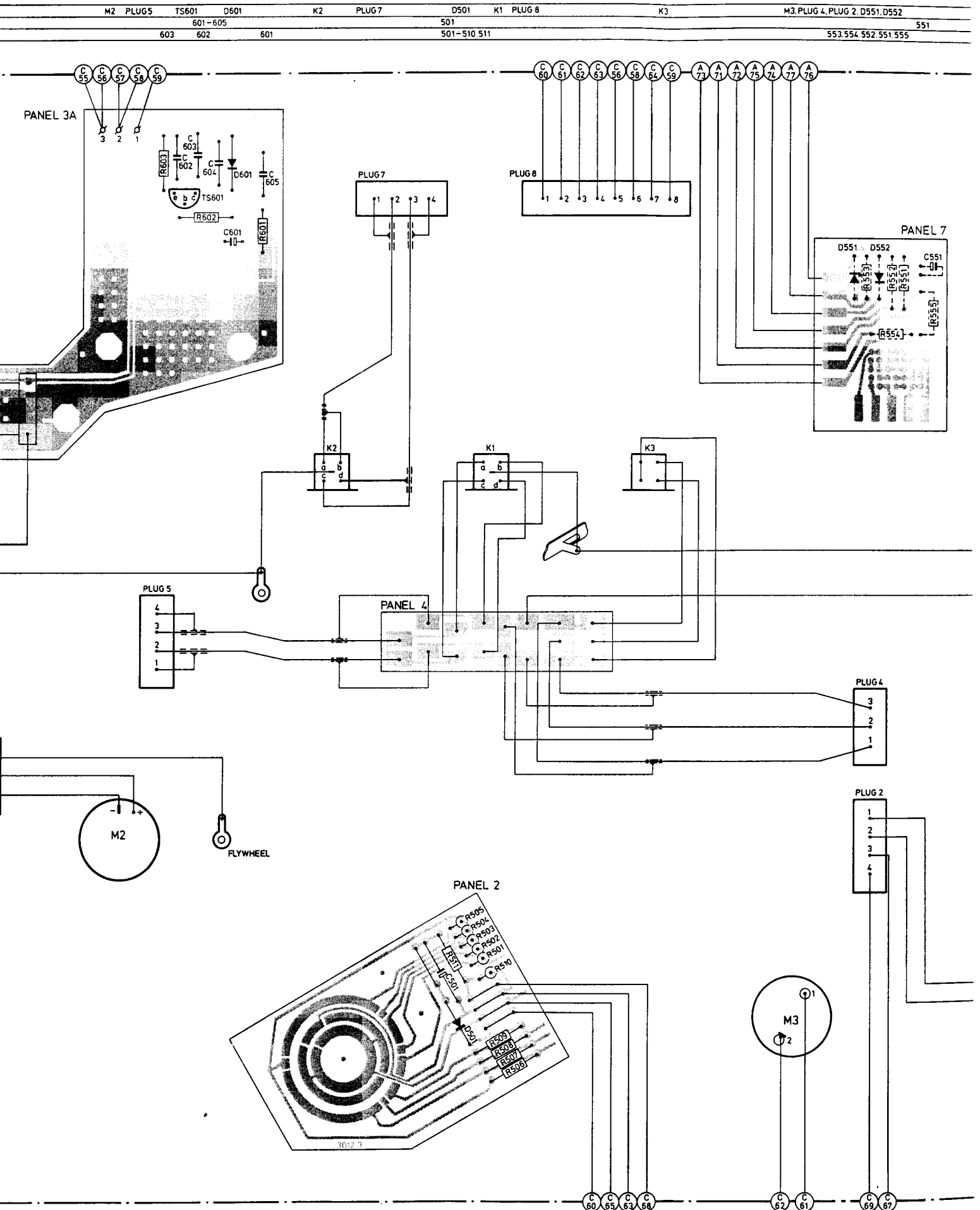
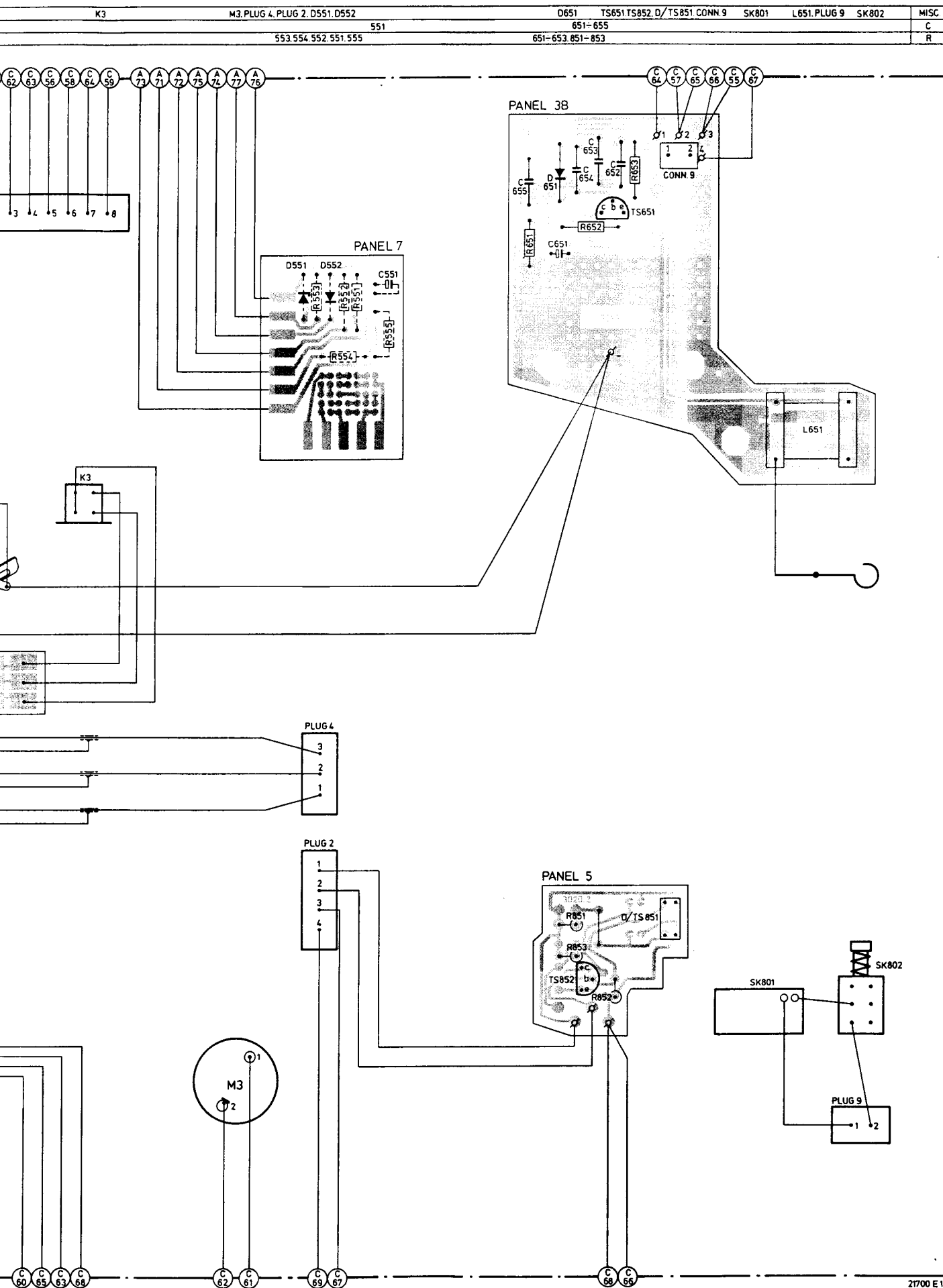
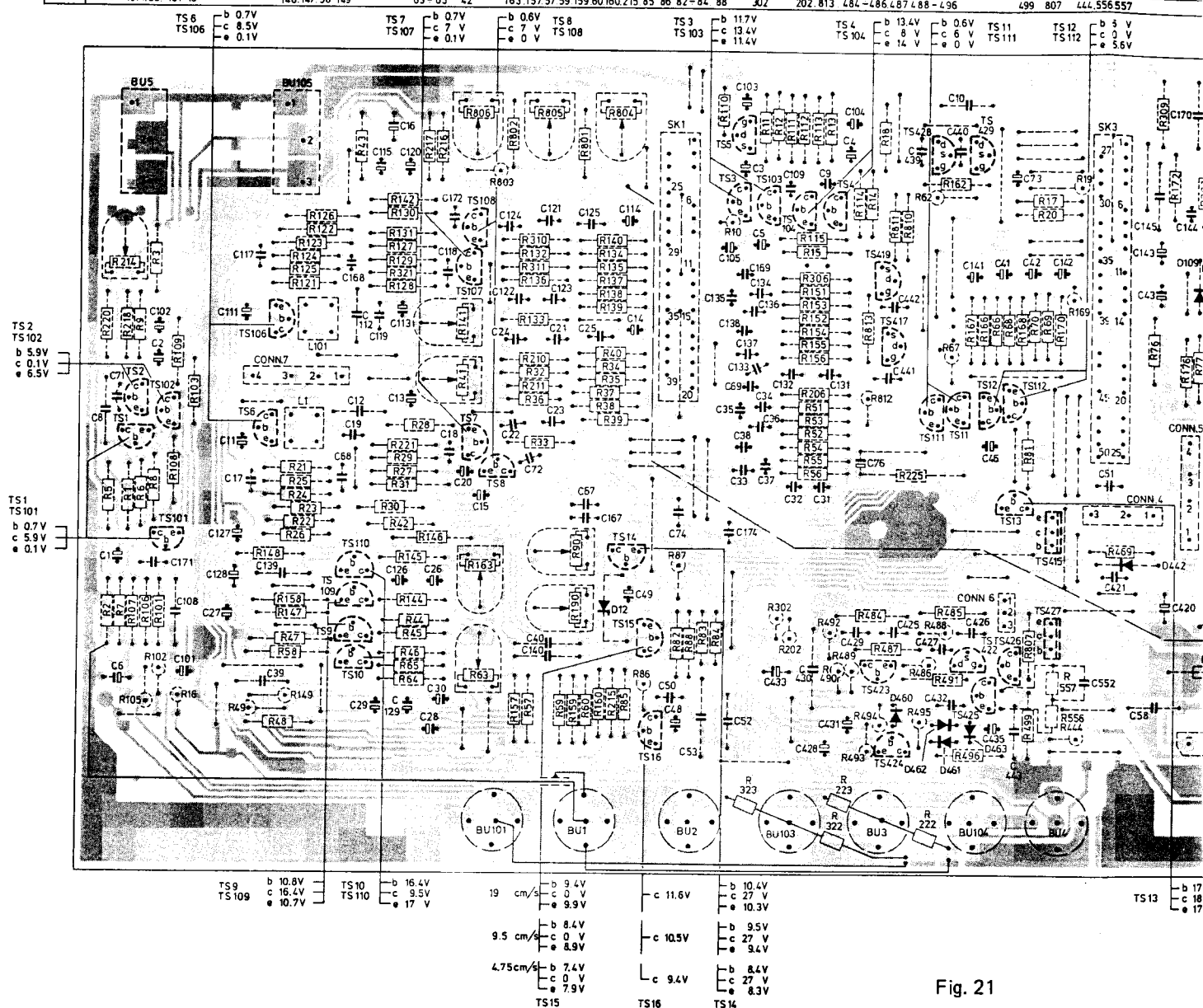


Fig. 20

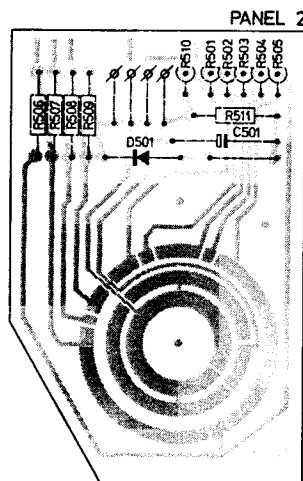


21700 E 13

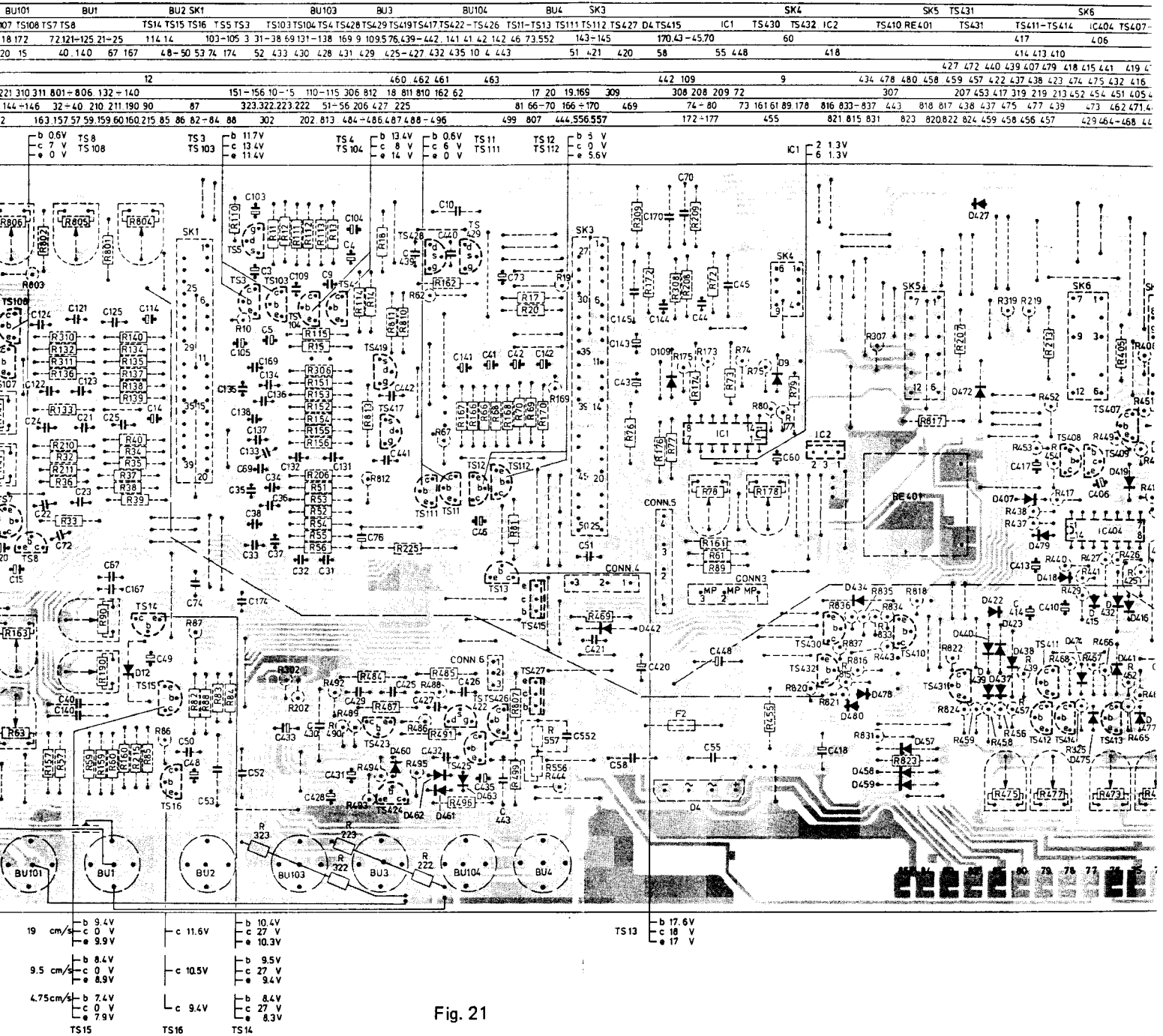
Fig. 20



R	506 507 508 509	510.501.502.503.504.505.511
MISC	D501	C501



21695 A 13



MISC	D601	TS601	L601
C	605	601 604 603 602	
R	601	602 603	

507 508 509 S10 S01 S02 S03 S04 S05 S11
O501 CS01

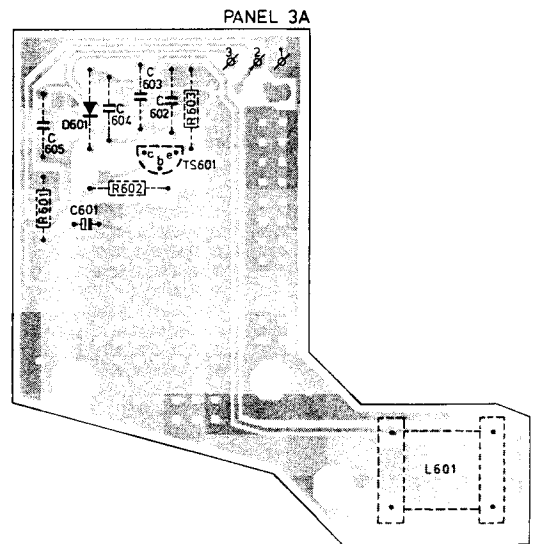
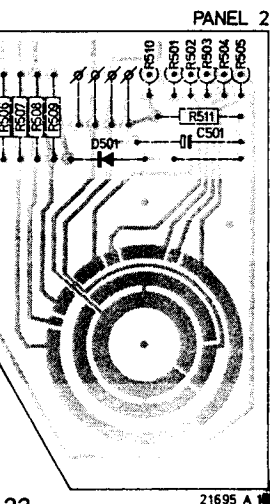
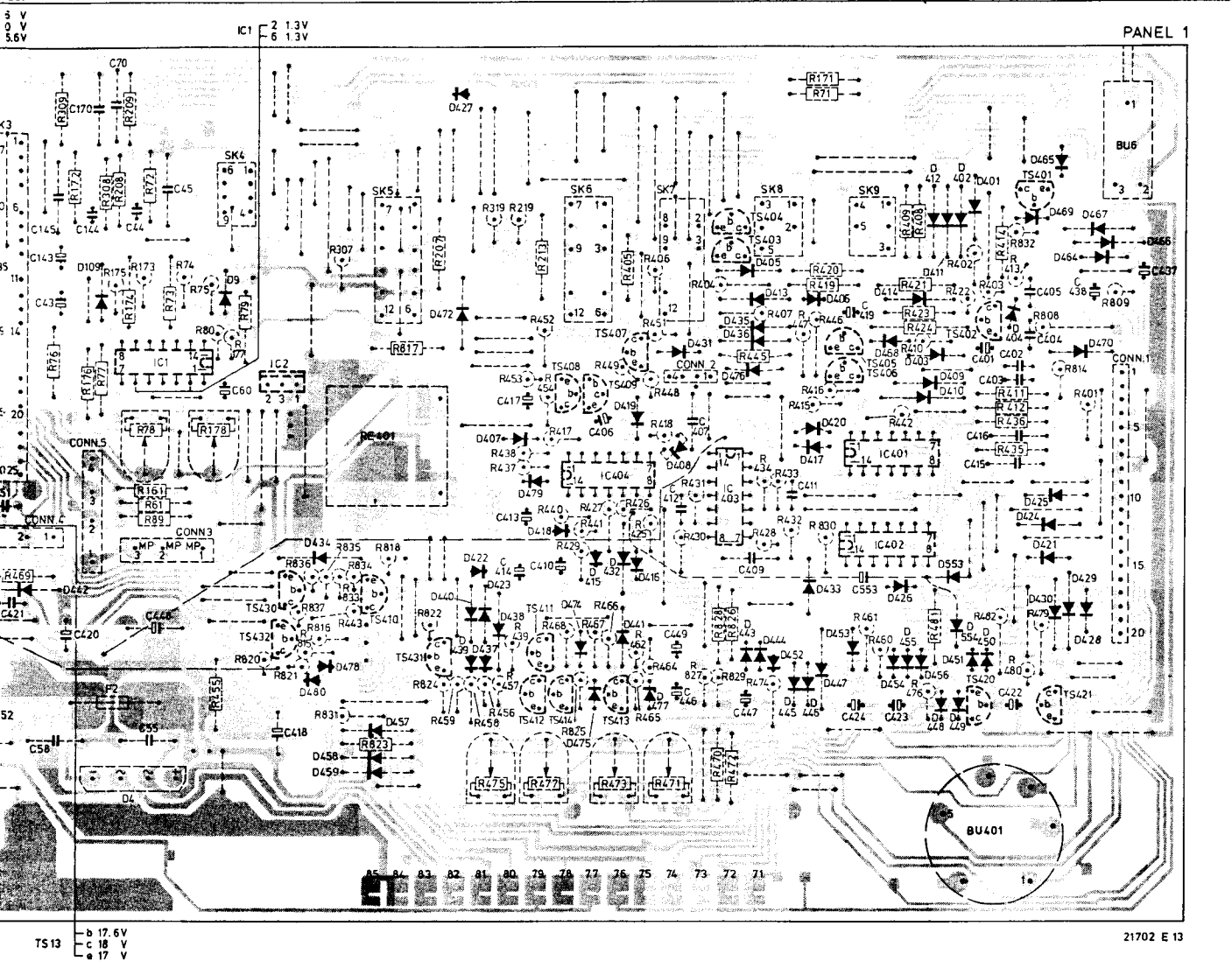


Fig. 23

SK3	SK4	SK5	TS431	SK6	SK7	SK8	SK9	BU6	MISC.
TS112 TS427 D4 TS415	IC1 TS430 TS432 IC2	TS410 RE401 TS431	TS411-TS414	IC404 TS407-TS409	IC403 TS403-TS406	IC402	IC401	TS402 TS420 TS401 TS421	
3-145	170.43-45.70	60	417	406	407	419	553	415 416 401-405	438
421 420 58	55 448	418	414 413 410	412 446 449 447 409	411	424	423	422	437
	442 109	9	434 478 480 458 459 457 422 437 438 423 474 475 432 416	419 477 476 431 408 435 436 405	413 443-451	433	452-456 553 426 404 424 475 554 421 428-430		D
S 309	308 208 209 72	307	207 453 417 319 219 213 452 454 451 405 406 445 404 440 407 447 446 434 433 409 408 421 419 420 402 423 424 832 422	473 462 471 448 449 451 418 431 416 474 415 432 428 830 442 471 71 481 411 412 436 435 479 814 401 478 480					R
170 469	74-80	73 161 61 89 178	816 833-837 443	818 817 438 437 475 477 439					
6557	172-177	455	821 815 831	823 820 822 824 459 458 456 457	429 464-468 441 470 472	430 825-829 425-427	461 460	476 475 478 403 482 414	



MISC.	D601	TS601	L601	L651	CONN9	TS651	D651
C	605	601.604 603 602				652.653 654 651 655	
R	601	602	603			653 652	651

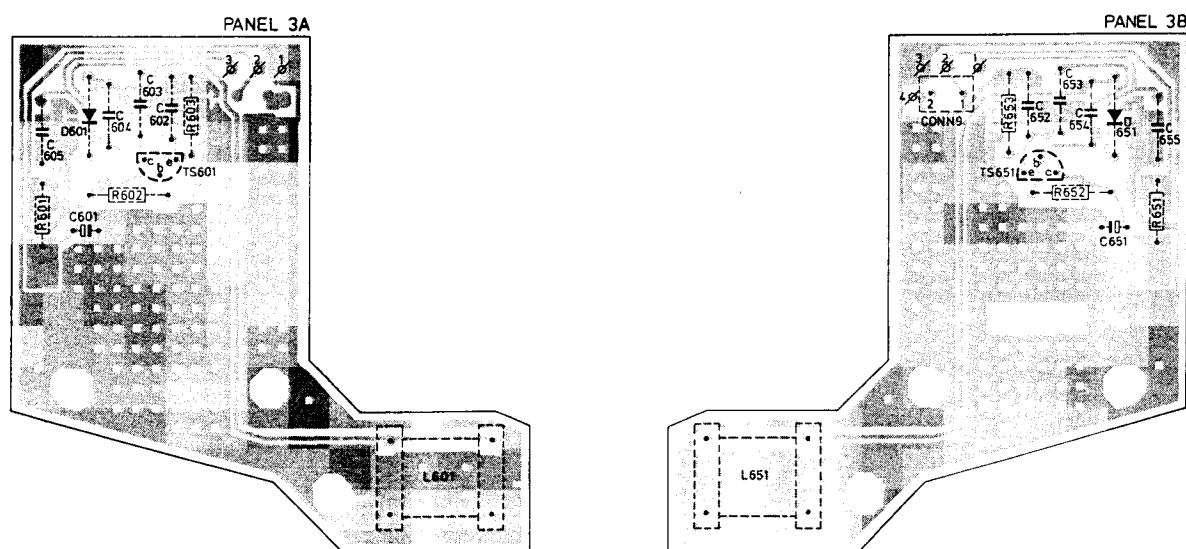


Fig. 23 21699 C13

MISC	IC902 IC903 IC901 L901									
C	902	927	904-908	921 922	901	903				
D	924	915 920	918 928 917 910	913 914	925 926 911 919 929					
R	920 917 919 922 905 904 911 912-915 901 902 916 906-910 921 923 903									
TS	962 966 910 914 912 952 915 946 917 932-934 965 964 943-945 901-909 963									
	949-951 919 956-961 935-942 931 948 947 954 955 918 920-930 911 916 913									
	907 909	901-904	908 905 910			911 906				

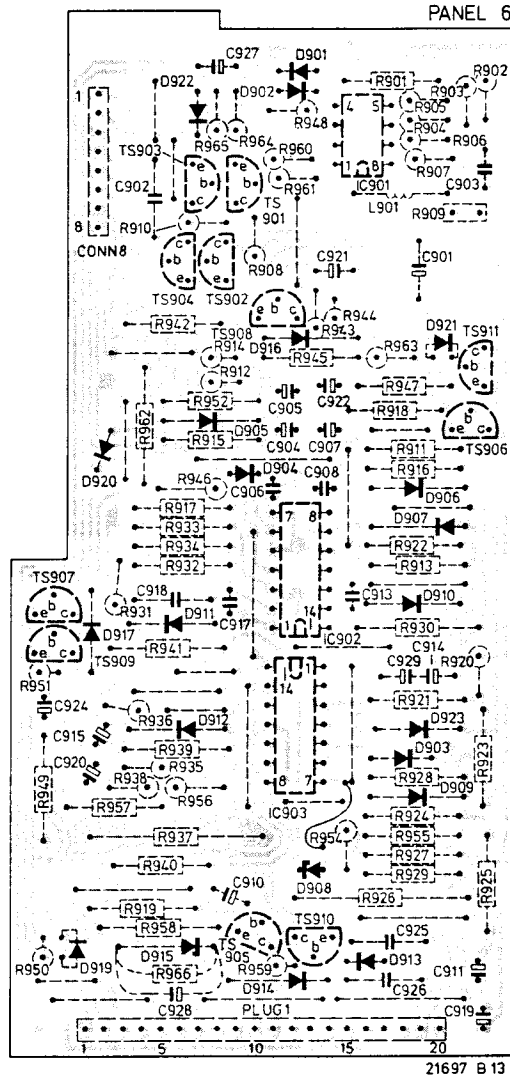


Fig. 24

R	852	851 853
MISC.	D/TS 851	TS852

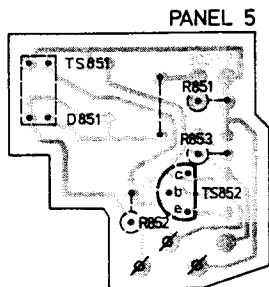


Fig. 25

D	551	552
C		551
R	553 554 552 551 555	

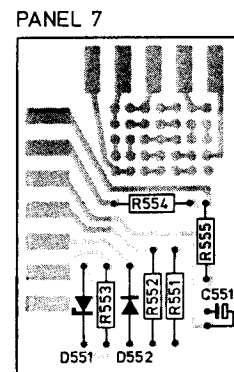


Fig. 26

-C-				-D-			
1-4-11-13-14-15-73-101-104-111-113-114-115-423-424-428-927	4μ7	35 V	4822 124 40313	BY225-100		4822 130 30917	
8-17-18-74-108-117-118-174				BZX75/C2V1		4822 130 34049	
9-109	22 p	50 V	4822 122 31463	BZX79/C3V3		5322 130 30392	
10-409-410	22 n	250 V	4822 121 40407	BZX79/C6V2		4822 130 34167	
19-67-119-167	220 p	50 V	4822 122 10172	BZX79/C12		4822 130 34197	
21-121	6.2 n	63 V	4822 121 50633	BZX79/C27		4822 130 34379	
22-122	5.6 n	63 V	4822 121 50543	CQY54		4822 130 30914	
23-123	6.8 n	63 V	4822 121 50538	D/TS851		4822 256 90244	
24-124	82 n	50 V	4822 122 40208	IN4002		5322 130 30684	
25-125	270 p	50 V	4822 122 31465	IN4148		4822 130 30621	
27-29-42-49-127-129-142-446-447-501	22 μ	16 V	4822 124 40312	For Service Manuals Contact MAURITRON TECHNICAL SERVICES 8 Cherry Tree Rd, Chinnor Oxon OX9 4QY Tel: 01844-351694 Fax: 01844-352554 Email: enquiries@mauritron.co.uk			
31-131				HEF4001BC		4822 209 10112	
32-132	1.5 n	50 V	4822 122 31464	HEF4011BC		4822 209 10113	
33-133	330 p	50 V	4822 122 10163	HEF4016BP		5322 209 14119	
34-134	470 p	50 V	4822 122 31355	HEF4081BC		4822 209 10111	
35-40-45-135-140-145	1.4 n	125 V	4822 121 50768	LM324N		5322 209 85899	
36-136	2.2 n	50 V	4822 122 10164	NE532V		4822 209 80484	
37-137				μA7818UC		4822 209 80404	
38-138	1 n	250 V	4822 121 50566				
39-139	4.7 n	63 V	4822 121 50738				
43-143	6.8 n	50 V	4822 122 40206				
44-144	56 n	100 V	4822 121 41154				
50	47 μ	15 V	4822 124 40311				
51	100 n	50 V	4822 122 31433				
52	11 n	63 V	5322 121 54147				
55-58-415-416-443-605-655-902	8.2 n	63 V	5322 121 54151				
68-168-426-427-711-712-913-917	39 n	250 V	4822 121 40413				
69-169	100 n	100 V	4822 121 41161				
70-170							
71-171	4.7 n	50 V	4822 122 10176				
72-172	5.6 n	50 V	4822 122 40169				
77-177	10 n	25 V	4822 122 10177				
81-181	10 p	63 V	4822 122 31526				
82-182	27 p	50 V	4822 122 31472				
83-183	1 n	50 V	4822 122 31356				
84-184	10 μ	16 V	4822 124 40309				
85-185							
86-186	3.3 n	50 V	4822 122 10156				
87-187	22 n	25 V	4822 122 10188				
88-188	6.8 n	63 V	4822 121 50538				
89-189	4700						

